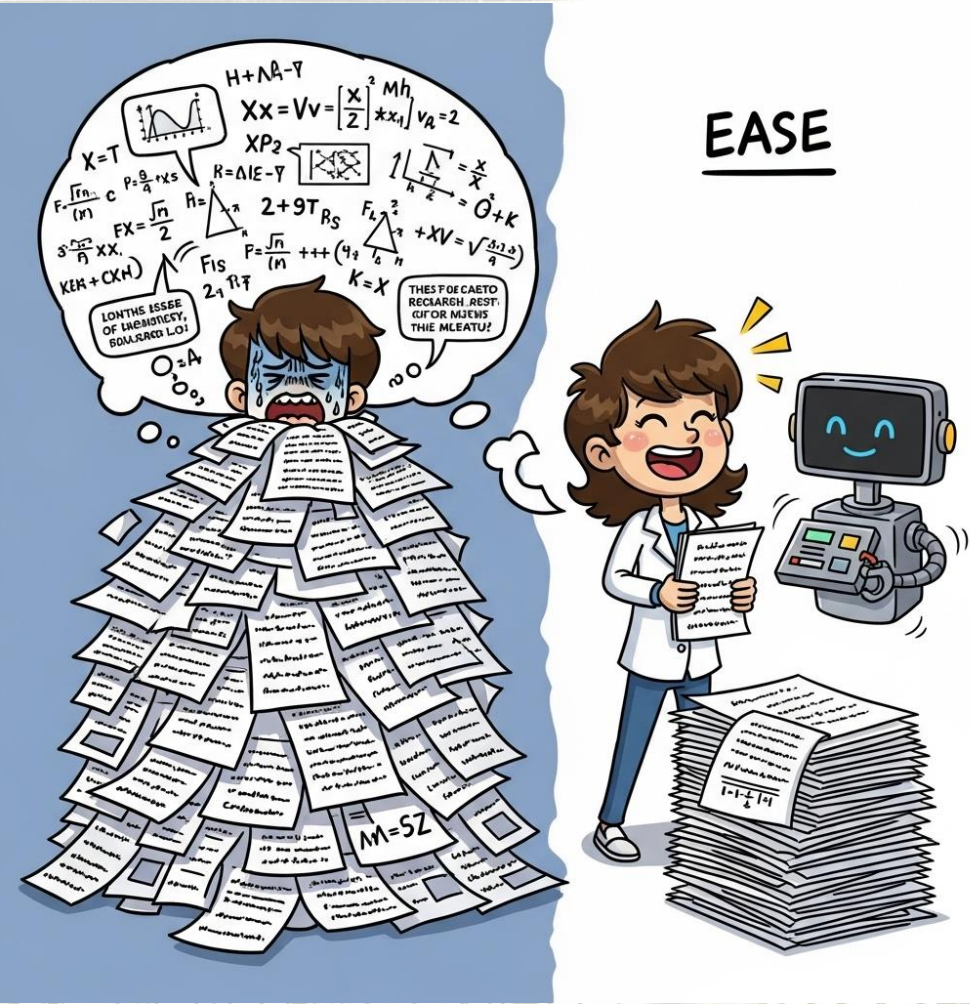




EASE



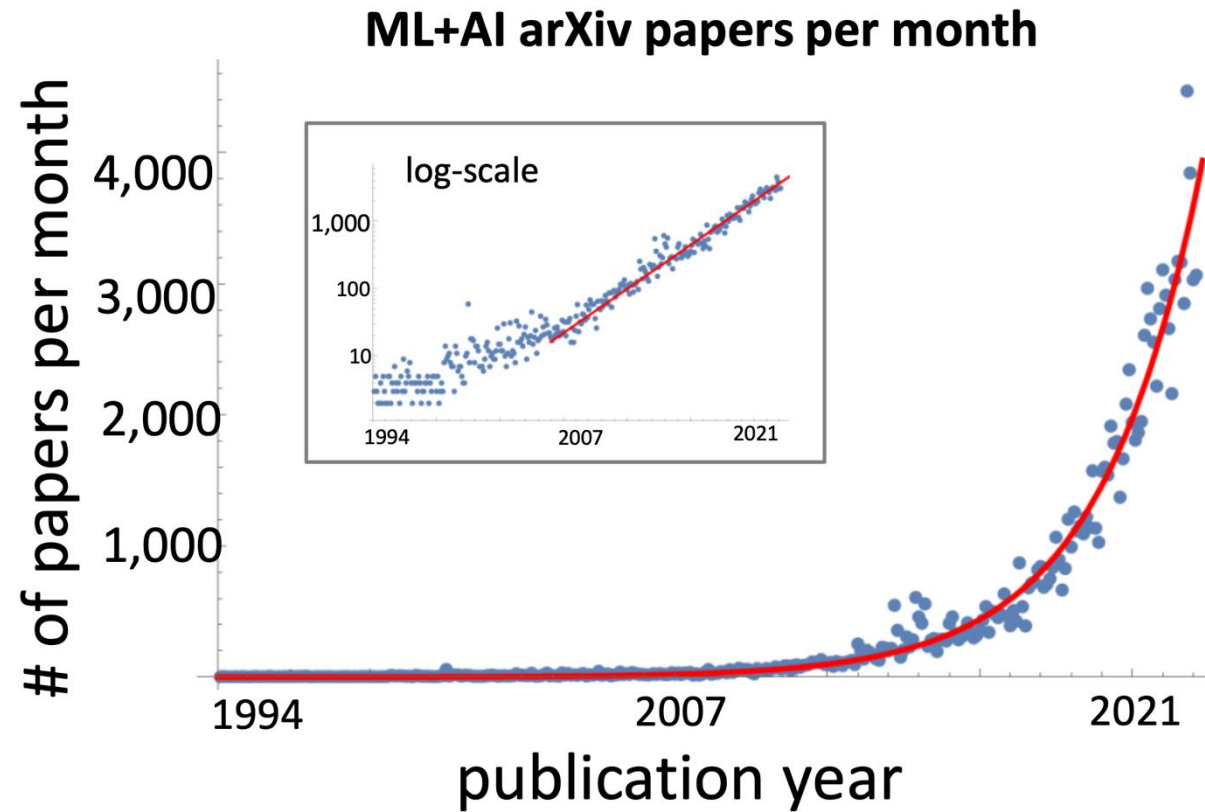
AI-Supported Literature Search

TRANSFORMING SCIENCE WITH LARGE LANGUAGE MODEL



Dr. Yong Cao
PostDoc, University of Tübingen
2025-07-26

Research Growth



← Tweet



5:30 vorm. · 31. Mai 2022 · Twitter Web App

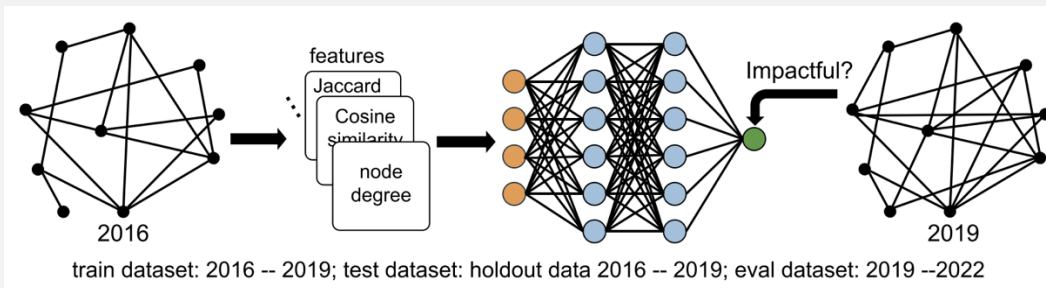
[Predicting the Future of AI with AI: High-Quality link prediction in an exponentially growing knowledge network, 2022](#)

*The real problem is **not** information overload, it's filter failure.*

— *Clay Shirky*

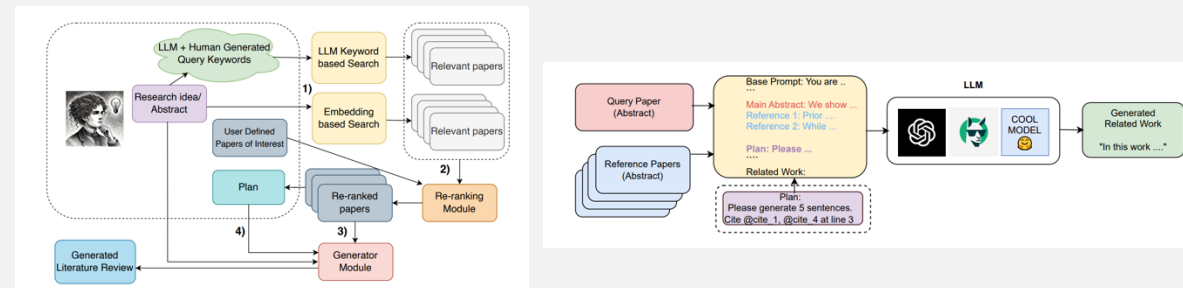
Why AI/LLMs for Literature Search?

Uncover Emerging Trends



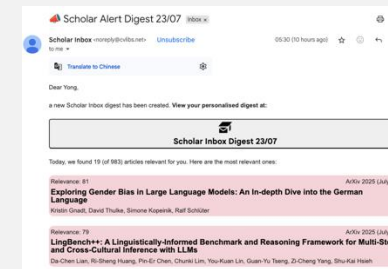
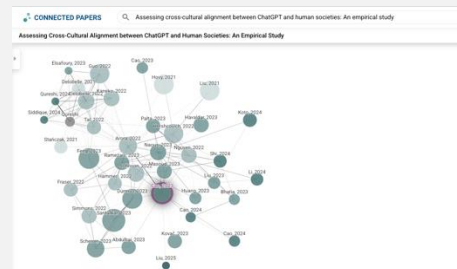
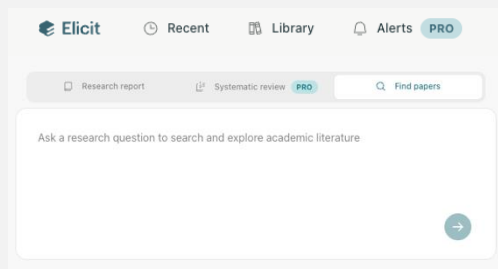
e.g., Forecasting high-impact research topics

Semantic & Relation Understanding



e.g., LLMs for literature review

Boost Research Efficiency and Increase Creativity



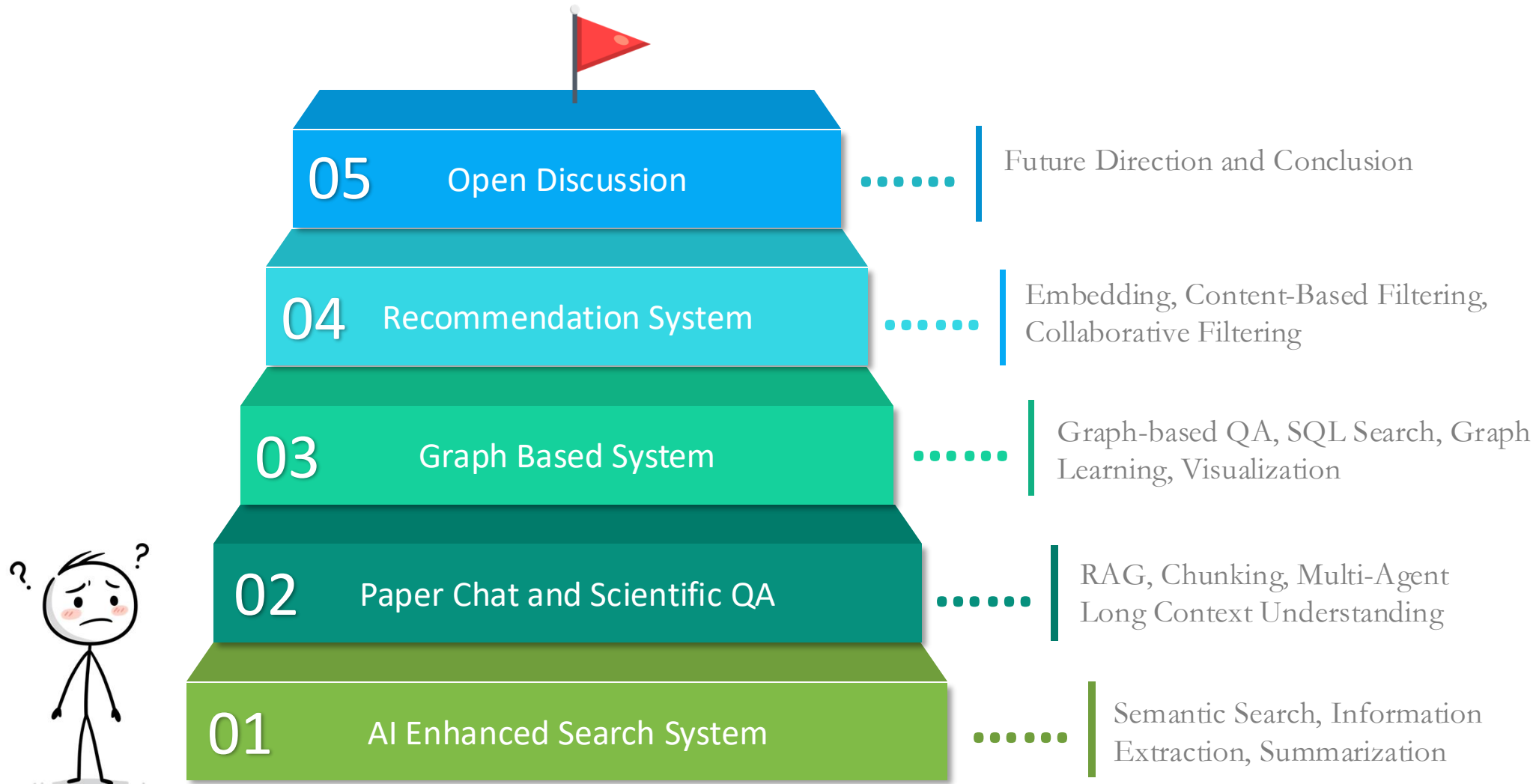
e.g., Scientific QA, Knowledge Graph Enhanced Search, Semantic Search, personalized Recommendation

[Forecasting high-impact research topics via machine learning on evolving knowledge graphs, 2025](#)

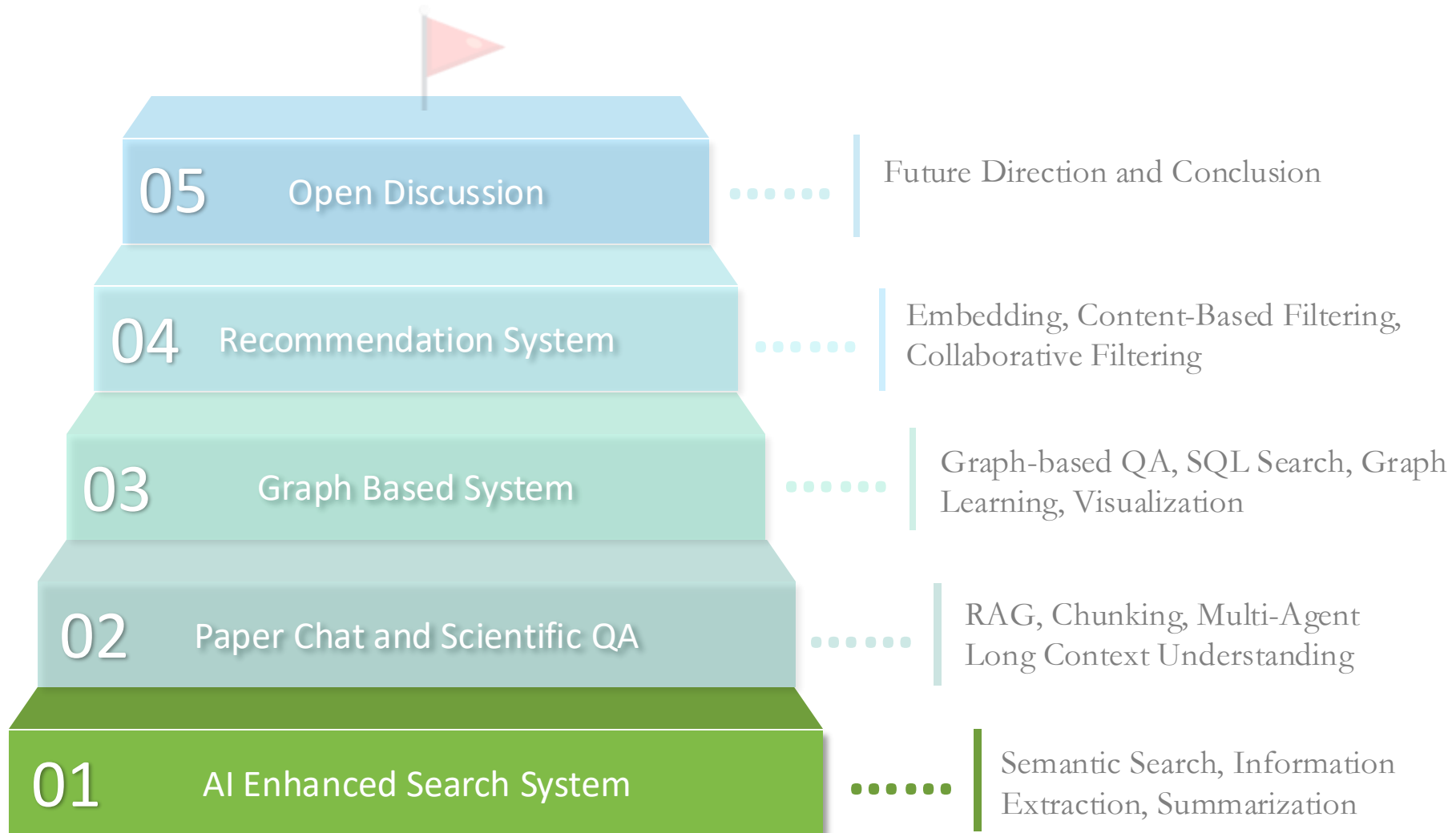
[LitLLMs, LLMs for Literature Review: Are we there yet? 2025](#)

[Elicit](#), [Connected Papers](#), [Scholar Inbox](#), [ResearchTrend.ai](#)

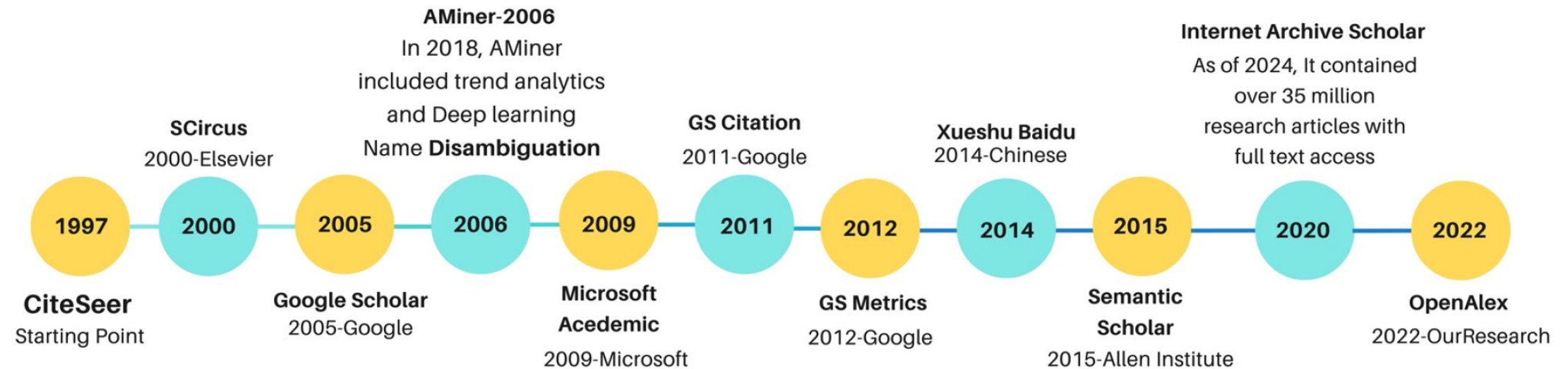
Outline



Outline



Evolution of academic search engines



Data Source

ResearchTrend.AI



SCISPACE



ChatGPT



ChatPDF



SEMANTIC SCHOLAR

arxiv-sanity



ORKG



bioRxiv

THE PREPRINT SERVER FOR BIOLOGY

medRxiv

THE PREPRINT SERVER FOR HEALTH SCIENCES



CONNECTED
PAPERS

Elicit



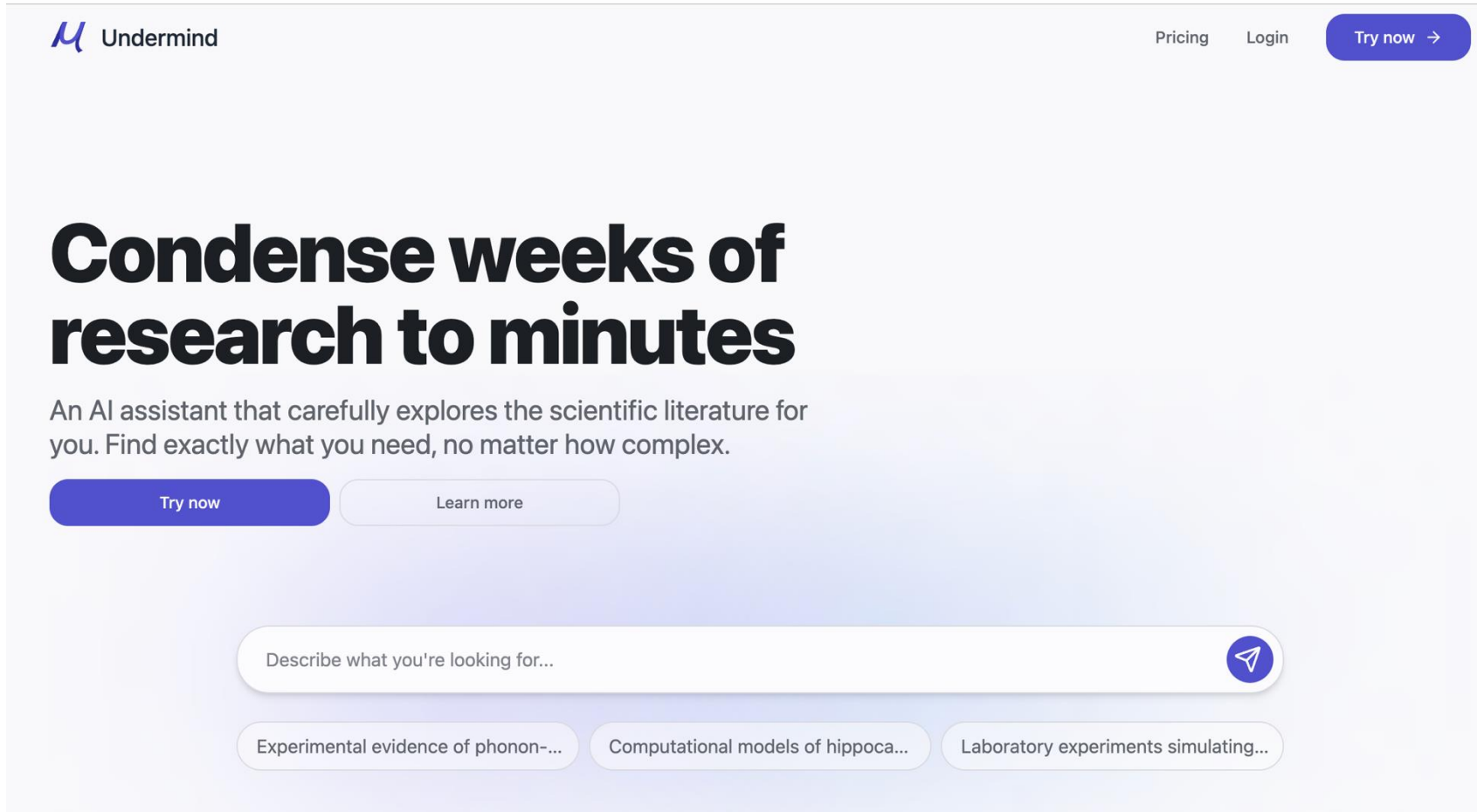
Undermind

Ai2 OpenScholar



NotebookLM

1 - AI Enhanced Search System



The screenshot shows the homepage of the Undermind website. The header features the Undermind logo on the left, and links for 'Pricing', 'Login', and a 'Try now' button on the right. The main content area has a large heading 'Condense weeks of research to minutes' followed by a subtext: 'An AI assistant that carefully explores the scientific literature for you. Find exactly what you need, no matter how complex.' Below this are two buttons: 'Try now' and 'Learn more'. At the bottom, there is a search bar with the placeholder text 'Describe what you're looking for...' and a search icon. Below the search bar are three example search queries in rounded rectangles: 'Experimental evidence of phonon-...', 'Computational models of hippoca...', and 'Laboratory experiments simulating...'.

Undermind

Pricing Login Try now →

Condense weeks of research to minutes

An AI assistant that carefully explores the scientific literature for you. Find exactly what you need, no matter how complex.

Try now Learn more


Describe what you're looking for...

Experimental evidence of phonon-... Computational models of hippoca... Laboratory experiments simulating...


1 - AI Enhanced Search System

The screenshot displays the Undermind web application interface. At the top, the navigation bar includes the Undermind logo, a menu with 'Elicit', 'Recent', 'Library', and 'Alerts' (marked as 'PRO'), and links for 'Pricing', 'Login', and a 'Try now' button. A user profile for 'yongcao2018@gmail.com' is visible on the right. The main content area features a search bar with tabs for 'Research report' and 'Systematic review' (marked as 'PRO'), and a 'Find papers' search icon. Below the search bar, a large text input field prompts the user to 'Ask a research question to generate a structured research report'. Underneath this field, a suggestion to 'Try a couple of free examples to see what this is all about' is provided, along with three example prompts: 'GLP-1R mechanisms', 'Magnesium effects on sleep', and 'Online vs. in-person CBT'. A blue arrow button is positioned to the right of these examples. At the bottom, a 'More tools' section contains four buttons: 'Upload and extract', 'Summarize concepts', 'Chat with papers', and 'Create an alert' (marked as 'PRO').

1 - AI Enhanced Search System


Undermind

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Recent Questions

Can you suggest 3 pape... 

Can you suggest 3 papers that study LLMs' abilities of generating new research ideas in NLP?

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Certainly! Here are three papers that study LLMs' abilities of generating new research ideas in NLP:


- "IdeaBench: Benchmarking Large Language Models for Research Idea Generation" ([Guo et al. 2024¹](#)) ([Guo et al. 2024²](#)) ([Guo et al. 2024³](#))

This paper presents a benchmark for evaluating LLMs' ability to generate research ideas. The authors create a dataset of recent papers from five domains (Computer Science, Economics, Chemistry, Physics, and Medicine) and annotate them with future research ideas. They then evaluate four LLMs (Gemini, Claude-2, GPT-3.5, and GPT-4) on their ability to generate ideas that align with the target papers' ideas. The results show that LLMs can generate research ideas that are novel, relevant, and feasible to a significant extent.
- "Can Large Language Models Unlock Novel Scientific Research Ideas?" ([Kumar et al. 2024¹](#)) ([Kumar et al. 2024²](#)) ([Kumar et al. 2024³](#))

This paper investigates the potential of LLMs in generating future research ideas across five domains. The authors create a dataset of recent papers from the same five domains as in the previous paper and annotate them with future research ideas. They then evaluate four LLMs (Gemini, Claude-2, GPT-3.5, and GPT-4) on their ability to generate ideas that align with the target papers' ideas. The results show that LLMs can generate research ideas that are novel, relevant, and feasible to a significant extent.
- "SciPIP: An LLM-based Scientific Paper Idea Proposer" ([Wang et al. 2024](#))

This paper proposes a scientific paper idea proposer (SciPIP) that leverages LLMs to assist researchers in generating new ideas. SciPIP constructs a literature retrieval database and uses LLMs to generate novel and feasible ideas aimed at addressing problems within the given background. The authors demonstrate the effectiveness of SciPIP in generating new research ideas in NLP.

These papers provide insights into the ability of LLMs to generate new research ideas in NLP and highlight the potential of LLMs in accelerating scientific research ([Kumar et al. 2024²](#)).


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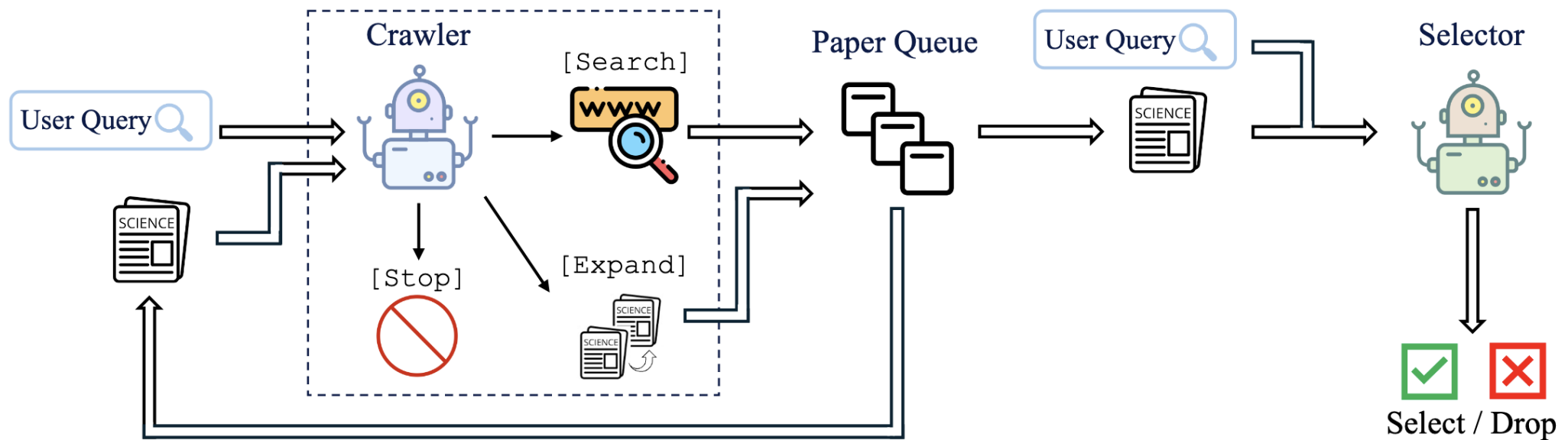
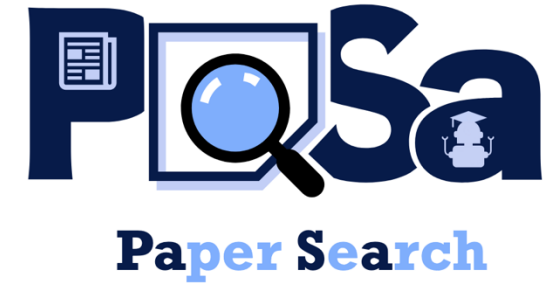
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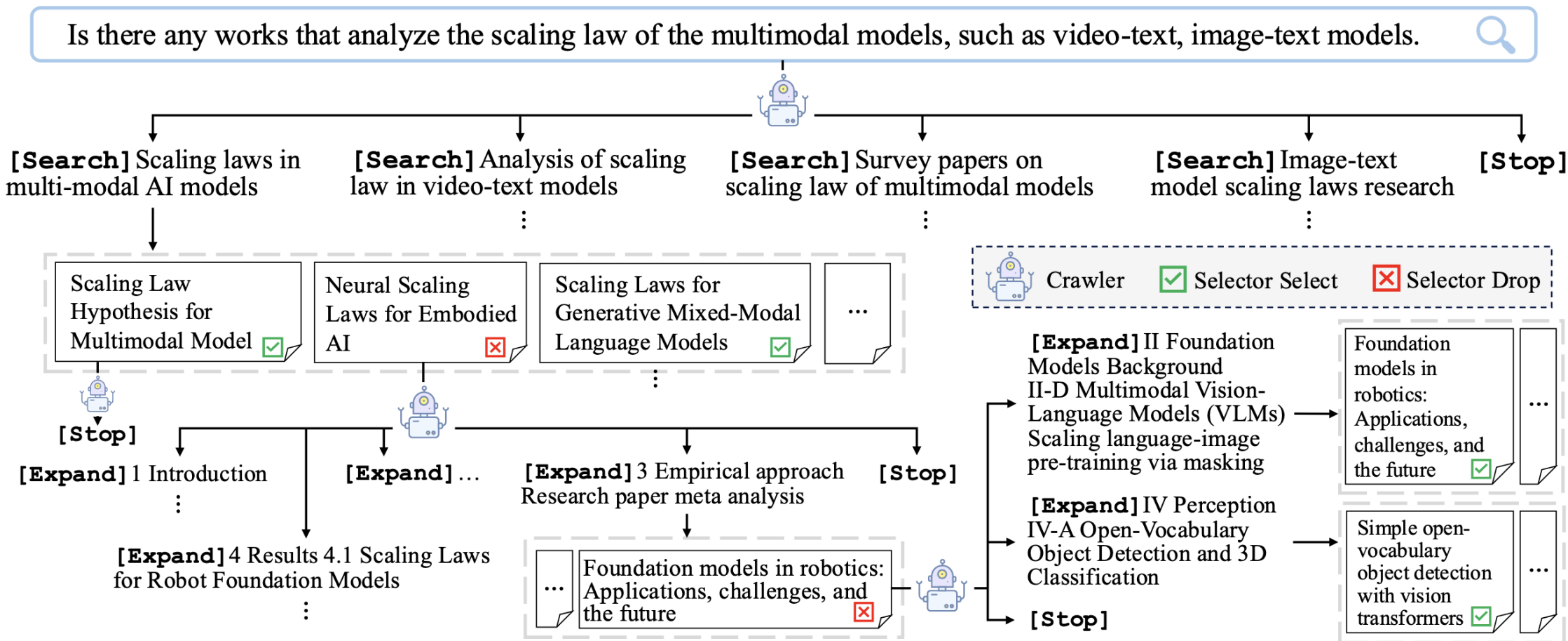
How AI enhance literature search platforms?

- Mimic human researchers workflows and expand search function.
- Two LLM agents: crawler and selector.



PaSa: An LLM Agent for Comprehensive Academic Paper Search, 2025

How AI enhance literature search platforms?



Performance

- Imitation Learning + Reinforcement Learning

$$\begin{aligned}
 \mathcal{L}_{\text{policy}}(\theta) &= \mathbb{E}_{\tau' \sim \pi_{\theta}^{\text{old}}} \left[\min \left(\frac{\pi_{\theta}(a_t|s_t)}{\pi_{\theta}^{\text{old}}(a_t|s_t)} \hat{A}(s_t, a_t), \right. \right. \\
 &\quad \left. \left. \text{clip} \left(\frac{\pi_{\theta}(a_t|s_t)}{\pi_{\theta}^{\text{old}}(a_t|s_t)}, 1 - \epsilon, 1 + \epsilon \right) \hat{A}(s_t, a_t) \right) \right] \\
 \mathcal{L}_{\text{value}}(\phi) &= \mathbb{E}_{\tau' \sim \pi_{\theta}^{\text{old}}} \left[\max \left(\left(\hat{R}_t - \hat{V}_{\phi}(s_t) \right)^2, \right. \right. \\
 &\quad \left. \left. \left(\hat{R}_t - \hat{V}_{\phi}^{\text{clip}}(s_t) \right)^2 \right) \right] \\
 \mathcal{L}_{\text{RL}}(\theta, \phi) &= \mathcal{L}_{\text{policy}}(\theta) + \eta \cdot \mathcal{L}_{\text{value}}(\phi)
 \end{aligned}$$

Method	Crawler Recall	Precision	Recall	Recall@100	Recall@50	Recall@20
Google	-	-	-	0.2015	0.1891	0.1568
Google Scholar	-	-	-	0.1130	0.0970	0.0609
Google with GPT-4o	-	-	-	0.2683	0.2450	0.1921
ChatGPT*	-	0.0507	0.3046	-	-	-
GPT-o1	-	0.0413	0.1925	-	-	-
PaSa-GPT-4o	0.7565	0.1457	0.3873	-	-	-
PaSa-7b	0.7931	0.1448	0.4834	0.6947	0.6334	0.5301
PaSa-7b-ensemble	0.8265	0.1410	0.4985	0.7099	0.6386	0.5326

Taxonomy-guided Index Construction

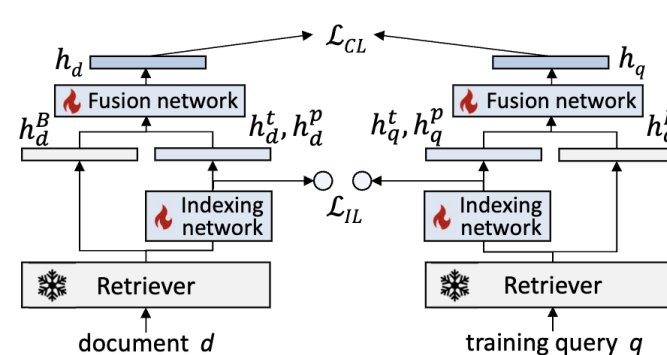
- The Problem: Beyond Surface-Level Text Matching

- TaxoIndex Framework

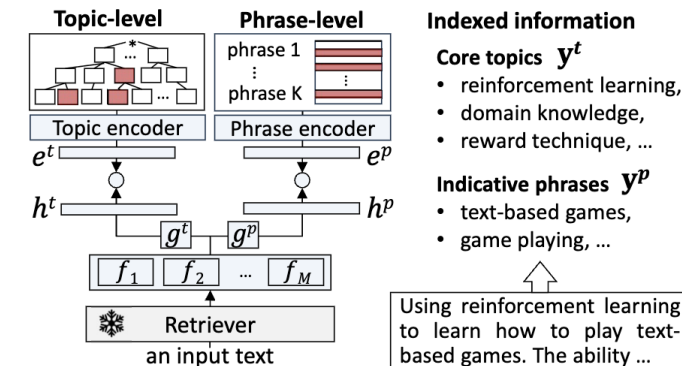
- Step 1: Constructing the Semantic Index

- Step 2: Index-grounded AI Training (Fine-tuning)

- Step 3: Enhanced Retrieval Process



(a) Index-grounded fine-tuning



(b) Index learning with the indexing network

		CSFCube						DORIS-MAE					
		N@5	N@10	M@5	M@10	R@50	R@100	N@5	N@10	M@5	M@10	R@50	R@100
BM25		0.307	0.310	0.088	0.134	0.504	0.635	0.354	0.330	0.079	0.107	0.490	0.669
SPECTER-v2	no Fine-Tuning	0.352	0.337	0.108	0.151	0.524	0.680	0.385	0.360	0.079	0.113	0.551	0.709
	FFT	0.372	0.368	0.123	0.169	0.576	0.692	0.408	0.387	0.084	0.122	0.562	0.736
	aFT	0.378	0.344	0.119	0.160	0.578	0.696	0.400	0.372	0.080	0.115	0.558	0.714
	FFT w/ GRF	0.331	0.317	0.112	0.152	0.561	0.705	0.400	0.379	0.087	0.123	0.586	0.756
	FFT w/ ToTER	0.406	0.375	0.135	0.179	0.591	0.710	0.423	0.394	0.091	0.128	0.563	0.736
JTR		0.379	0.352	0.118	0.157	0.598	0.699	0.395	0.380	0.080	0.118	0.548	0.713
TaxoIndex		0.458^{†*}	0.417^{†*}	0.144^{†*}	0.198^{†*}	0.633^{†*}	0.741^{†*}	0.447^{†*}	0.421^{†*}	0.104^{†*}	0.144^{†*}	0.578 [†]	0.756[†]
TaxoIndex ++		0.469^{†*}	0.426^{†*}	0.158^{†*}	0.209^{†*}	0.621^{†*}	0.746^{†*}	0.449^{†*}	0.424^{†*}	0.105^{†*}	0.145^{†*}	0.581[†]	0.751[†]

Deep Research -- ChatGPT / Gemini

Model data and training

- Browsing datasets
- Graded against the ground truth answers or chain-of-thought model
- Safety datasets from o1 training

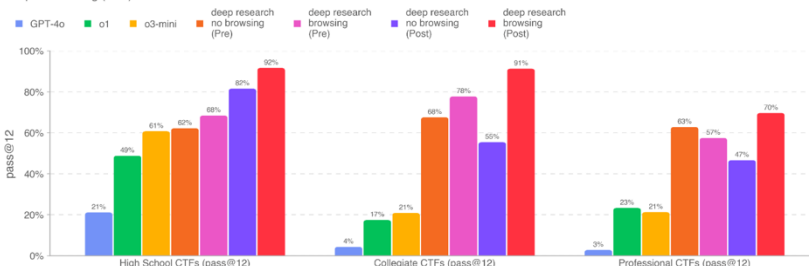
Risk and mitigation

- Prompt Injections
- Disallowed Content
- Privacy
- Ability to Run Code
- Bias
- Hallucinations

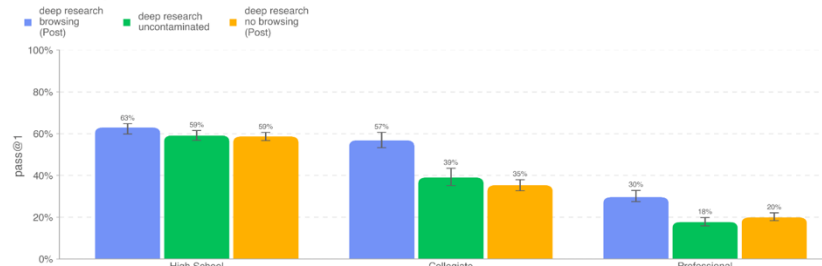
Overall
Evaluation:
Medium



Capture the Flag (CTF)



Capture the Flag Contamination



Planning

Deep Research transforms your prompt into a personalized multi-point research plan

Searching

Deep Research autonomously searches and deeply browses the web to find relevant, up-to-date information

Reasoning

Deep Research shows its thoughts as it reasons over information gathered iteratively and thinks before making its next move

Reporting

Deep Research provides comprehensive custom research reports with more detail and insights, generated in minutes and available as an Audio Overview, saving you hours of time

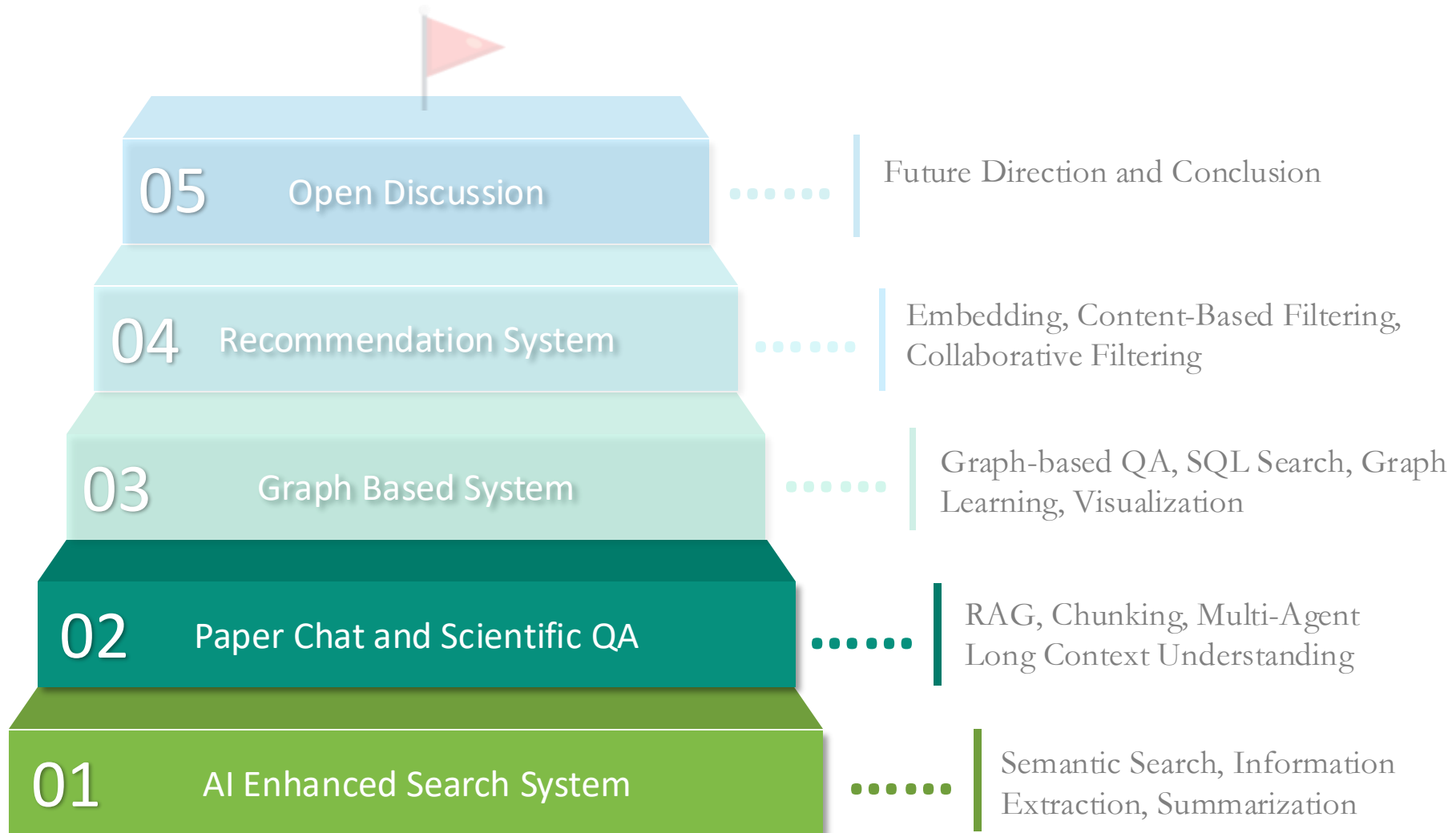


[Deep Research System Card, 2025](#)
[Gemini Deep Research](#)


1 (Summary) - AI Enhanced Search System

- Main Function
 - Optimize scholarly information retrieval
 - Context-aware, semantically rich, and personalized search results
- Key Techniques
 - LLM-based agents
 - Embedding-based Retrieval
 - Personalization
- Challenges
 - Data heterogeneity
 - Limited handling of complex scientific content




Outline



2 - Paper Chat and Scientific QA


 ChatGPT ▾



✦ Get Plus






What's on your mind today?

Ask anything

+
  Tools



ChatGPT ▾

✦ Get Plus



ChatGPT

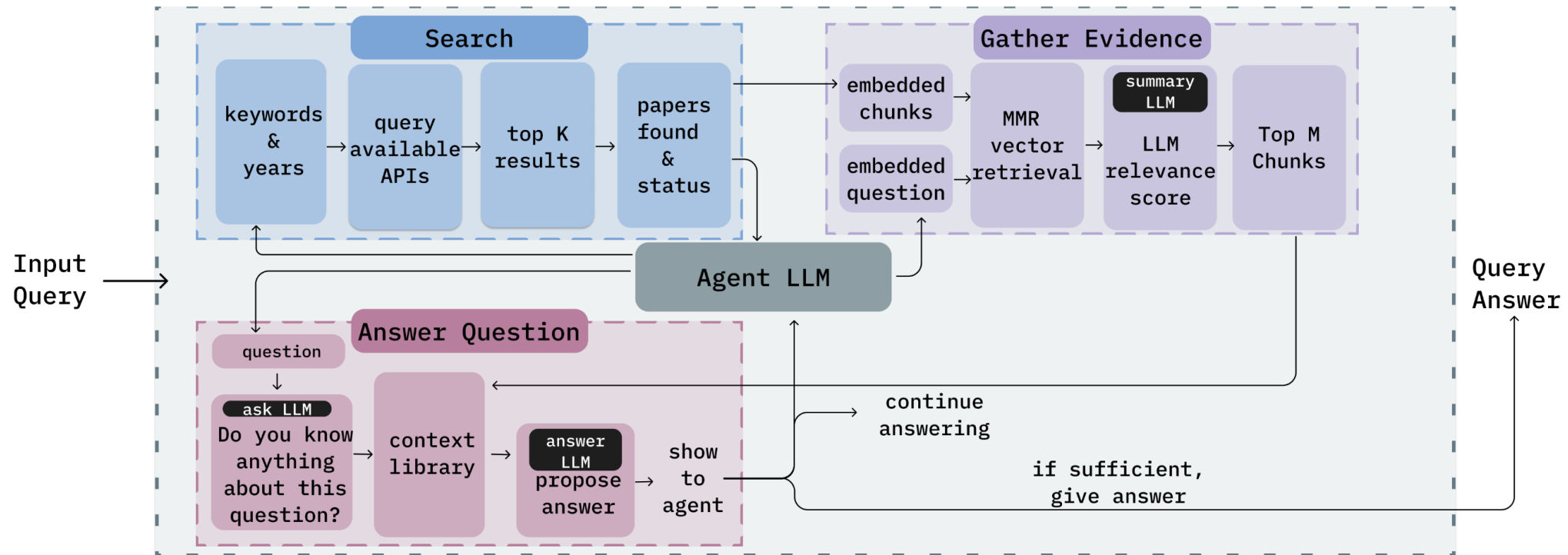
✦ Get Plus

ChatGPT

A screenshot of a web browser displaying the LLMCBench paper on the Explainpaper platform. The browser's address bar shows the URL 'https://explainpaper.com/paper/2410.21352v2'. The page title is 'LLMCBench: Benchmarking Large Language Model Compression for Efficient Deployment'. The authors listed are Ge Yang¹, Changyi He¹, Jinyang Guo¹, Jianyu Wu¹, Yifu Ding¹, Aishan Liu¹, Haotong Qin², Pengliang Ji³, and Xianglong Liu¹. The affiliations are ¹ Beihang University, ² ETH Zurich, and ³ Carnegie Mellon University. The abstract discusses the challenges of evaluating large language models (LLMs) and introduces the LLMCBench, a rigorously designed benchmark with an in-depth analysis for LLM compression algorithms. The paper is categorized under 'Computer science' and 'AI'. The browser's sidebar shows a list of categories, and the top navigation bar includes options like 'Analytics', 'Share', 'Settings', and 'PRO'. The bottom of the page shows the '1 Introduction' section, starting with 'Recently, large language models (LLMs) have attracted increasing attention because of their strong intelligence ability.' The browser's address bar also shows the URL 'https://explainpaper.com/paper/2410.21352v2'.

PaperQA – An Agent-Based RAG System

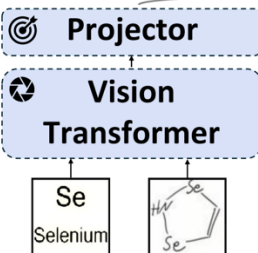
- Aims to address the hallucinations and knowledge update.
- Key Components:
 - Search, Gather Evidence, Answer Question



The diagram illustrates the semantic network for the manufacturing process of a shaft with a bearing seat. It shows the flow from research fields (Physical Sciences & Mathematics, Engineering) through materials (Steel, Steel + 20MnCr3), processes (Deposition welding, Hot forming, Cooling), and measurements (Hardness profile, Cross-section) to the final component (Shaft with bearing seat). The network includes various entities like research fields, materials, processes, measurements, and components, along with their relationships and associated identifiers (e.g., R17082, R17182, R17297).

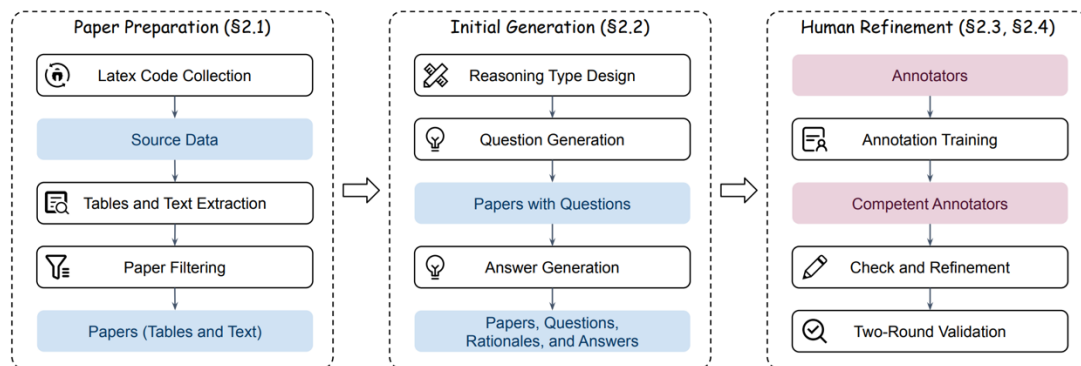


Chemical Large Language Model

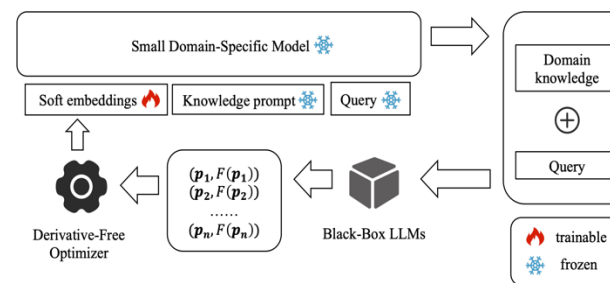


Multi-domal QA

KG Integration



Benchmarking



Domain knowledge

GIVE

Deductive Reasoning on KG triplets

Queried Entities

All KG Concepts

MIPS

Based on the retrieved knowledge, aortic arch is *part of* anatomical structure, which is the *location of* injury or poisoning. Anatomical structure also *affects* cell function, which further *affects* injury or positioning, suggesting the anatomy of the aortic arch could *influence* the severity of aortic trauma. Therefore, the correct answer to this question should be yes. ✓

anatomy

anatomical abnormality

anatomical structure

tissue

cell function

aortic trauma severity

injury or poisoning

clinical attribute

aortic injury

injury or poisoning

aortic arch

anatomical structure

Complex Reasoning

The SciQA Scientific Question Answering Benchmark for Scholarly Knowledge, 2023

ChemVLM: Exploring the Power of Multimodal Large Language Models in Chemistry Area, 2025

BLADE: Enhancing Black-box Large Language Models
with Small Domain-Specific Models, 2024

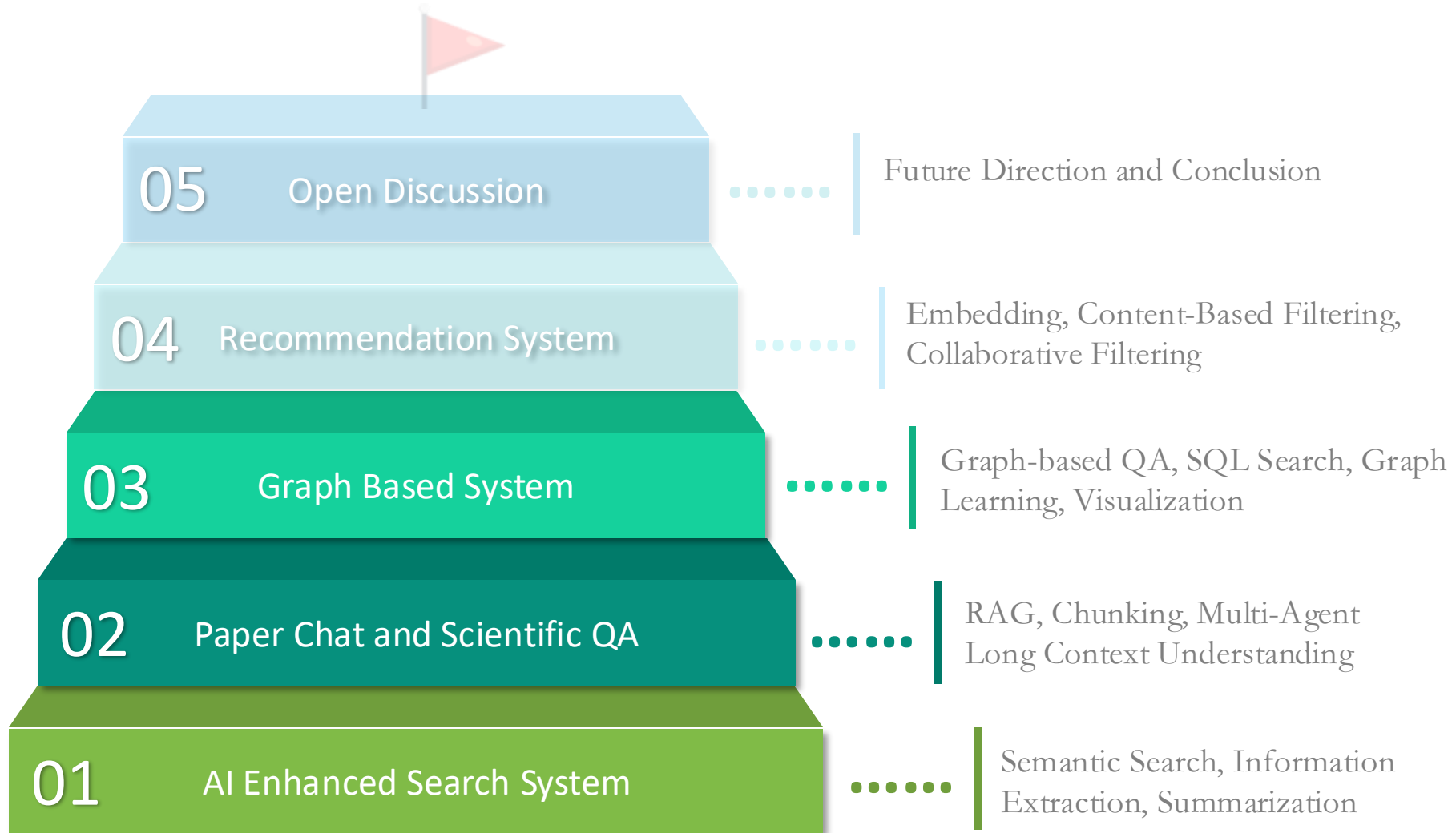
SCITAT: A Question Answering Benchmark for Scientific
Tables and Text Covering Diverse Reasoning Types,
2024

[GIVE: Structured Reasoning of Large Language Models with Knowledge-Graph-Inspired Veracity Extrapolation, 2025](#)

2 (Summary) - Paper Chat and Scientific QA

- Main Function
 - Interactive Q&A with research papers
- Key techniques
 - LLM-based agents
 - PDF Parsing & Contextual Chunking
 - Summarization & Key Point Extraction
 - Multi-turn Dialogue Tracking
- Challenges
 - PDF Quantity & Size Limits
 - Domain Knowledge
 - Reliability & Explainability

Outline



3 - Graph Based System


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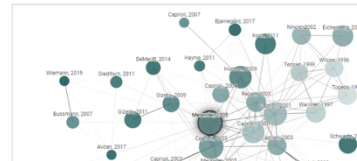
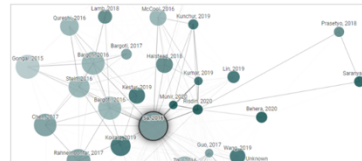

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- Jan 31, The [Sci2 \(Science of Science\) Tool v1.3](#) release provides support for Java 1.9 and removes deprecated plugins.

[Release Notes](#)

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An Emergent Mosaic of Wikipedian Activity

2 / 4 Start Stop (3)

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Trv: Anil K. Jain | Michie

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#9 press coverage

#7 television-ne

ADAMS, J. (1986)

CiteSpace

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Items with abstracts

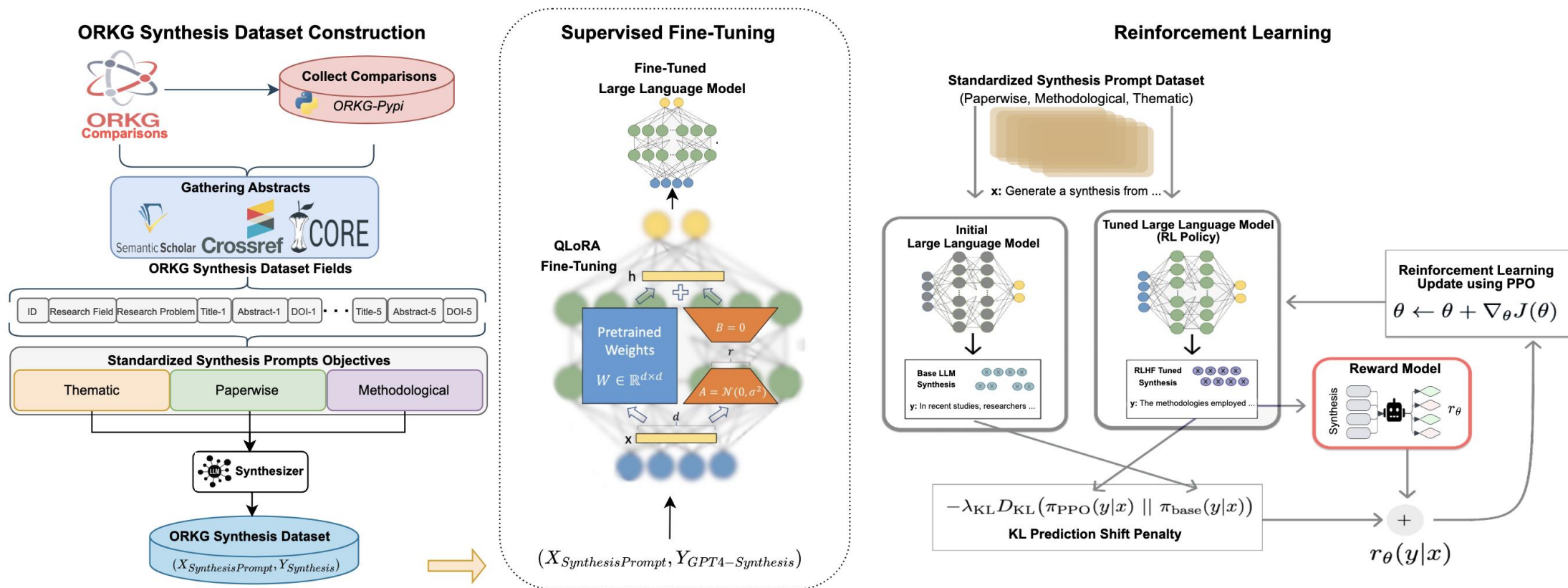
Getting started

- How does the availability of green spaces impact community health and well-being?
- What role does storytelling play in shaping collective memory and identity?
- What impact does access to quality early childhood education have on lifelong outcomes?
- What are the effects of sleep deprivation on cognitive performance and overall health?

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[LLMs4Synthesis: Leveraging Large Language Models for Scientific Synthesis, 2024](#)

Performance and Conclusion

- SFT+RLAIF performs the best.

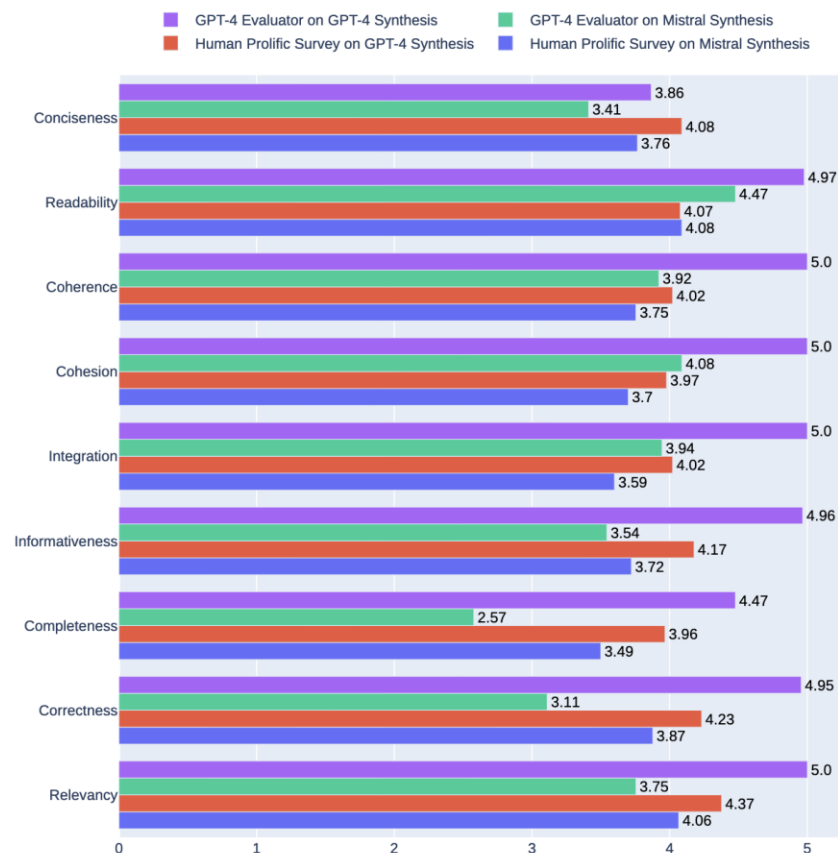
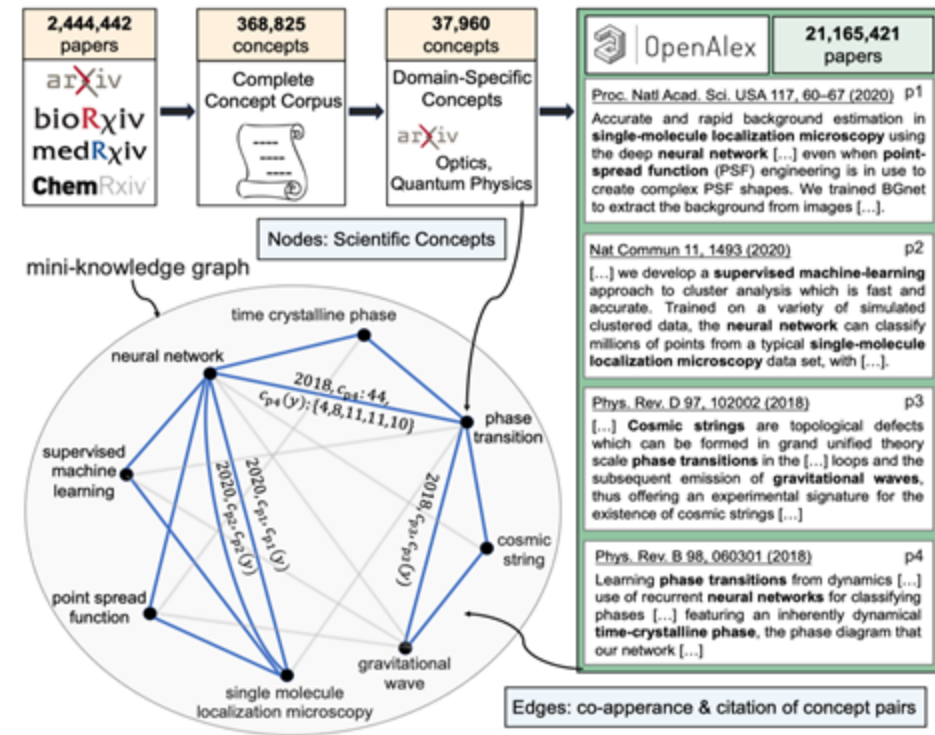


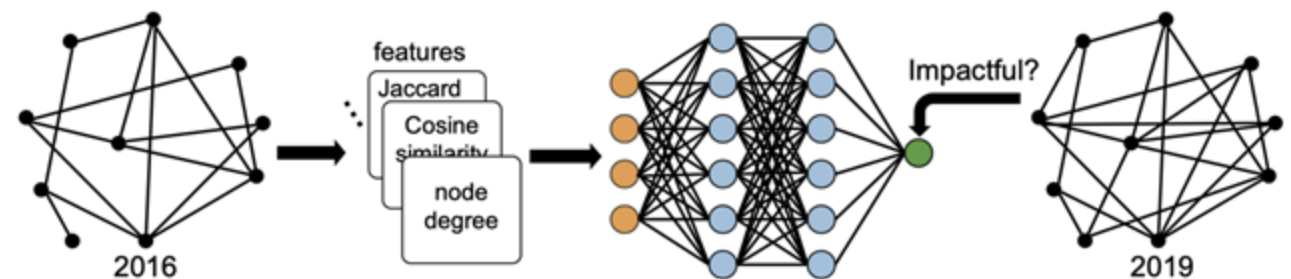
Figure 3: Consistency comparison of the GPT-4 evaluator between the *Vanilla* and *SFT+RLAIF (w/ GPT-4 Features)* models, assessed through three evaluations on the test set.

Trending Prediction

- Predict the impact of onsets of ideas.
- Extract 141 features for each pair are calculated.
 - 41 network features
 - 58 of these are node citation features
 - 42 features are about vertex pairs



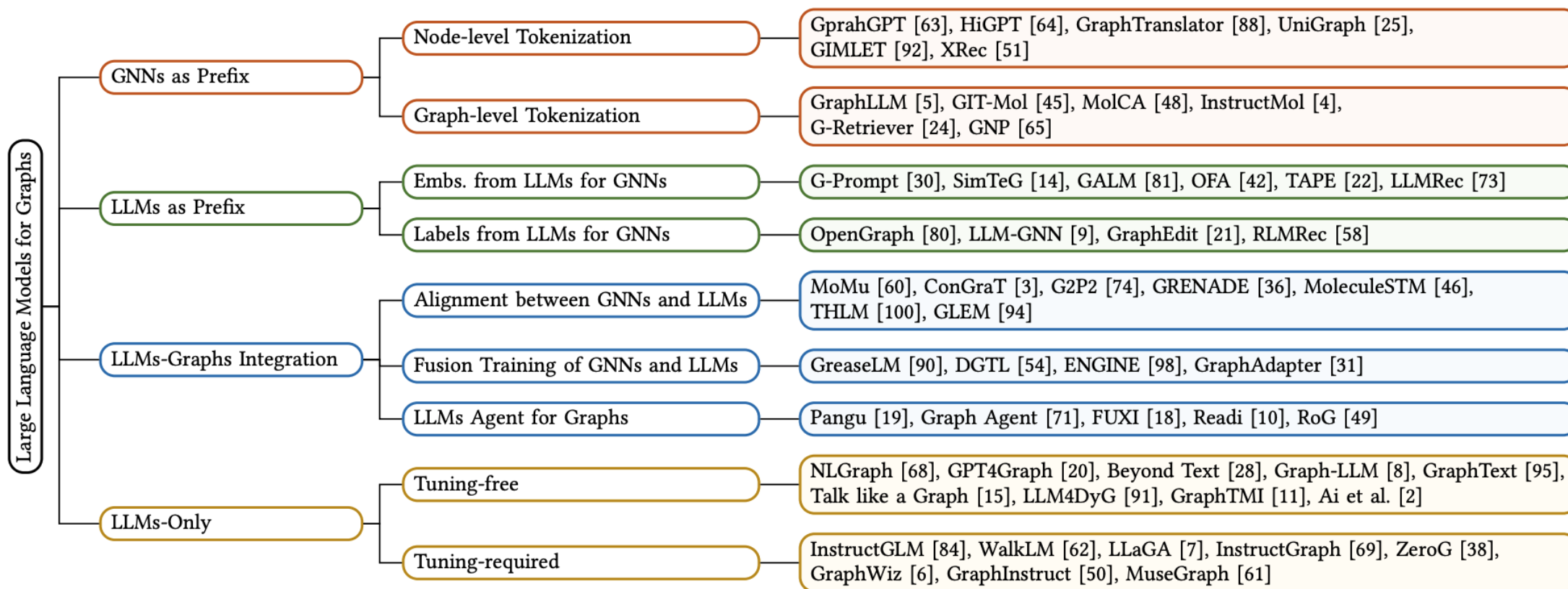
- Graph Learning?



train dataset: 2016 -- 2019; test dataset: holdout data 2016 -- 2019; eval dataset: 2019 --2022

[Forecasting high-impact research topics via machine learning on evolving knowledge graphs, 2025](#)

LLMs + Graph?

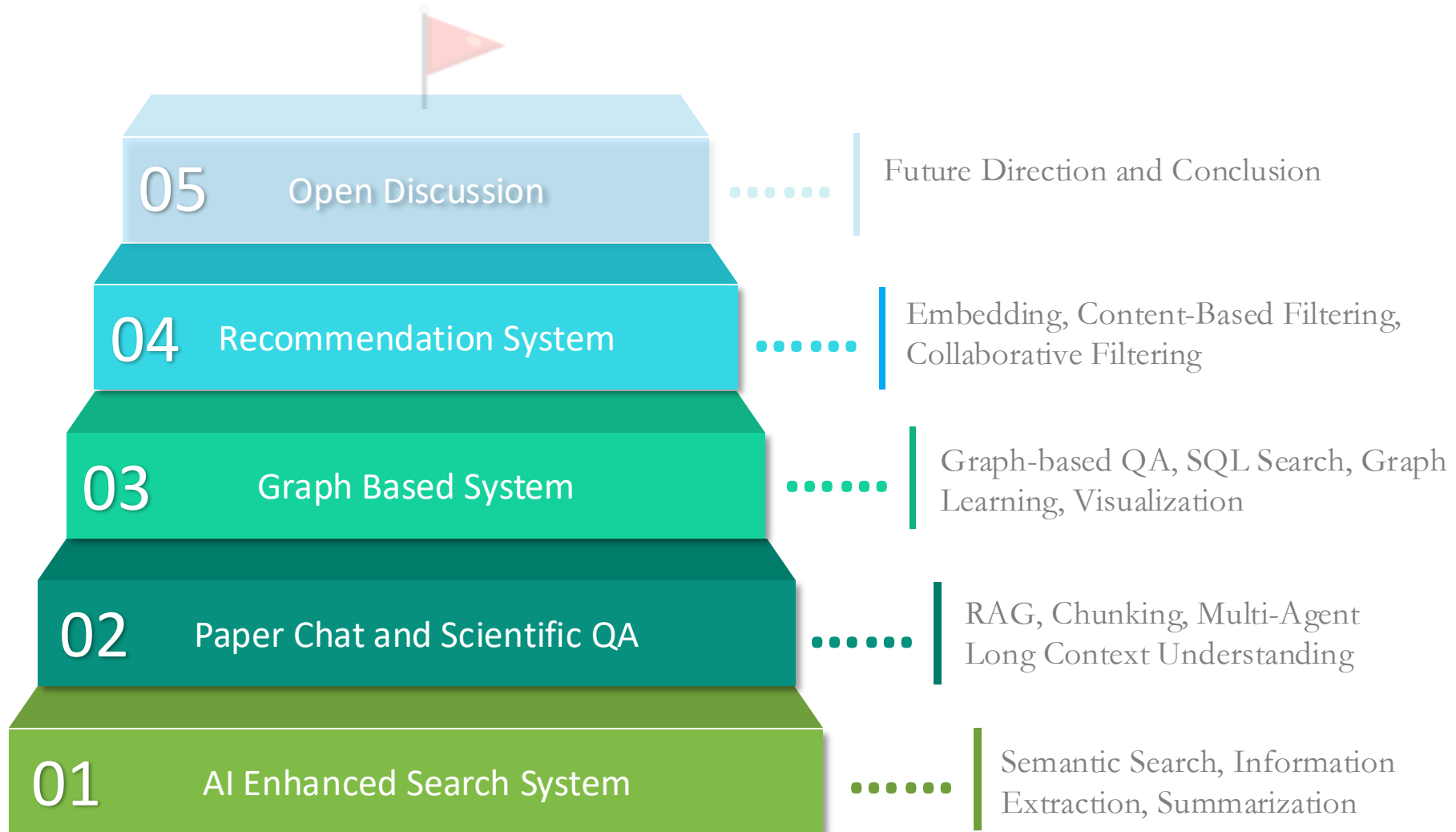


[A Survey of Large Language Models for Graphs, 2025](#)

3 (Summary) - Graph Based System

- Main Function
 - Relationships between research papers
 - Explore knowledge structures
- Key techniques
 - Citation & Co-Authorship Networks
 - Graph Visualization & Navigation
 - Trending & Citation Analysis
- Challenges
 - Effective Graph Representation
 - Graph Update
 - Integration with LLMs

Outline



4 - Recommendation System



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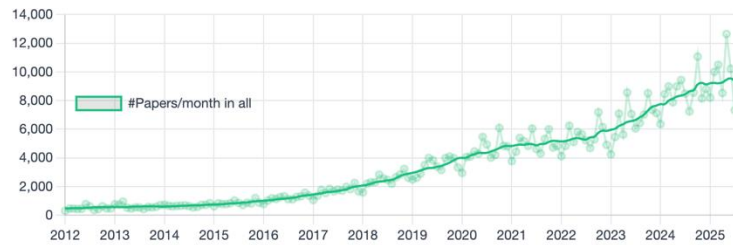
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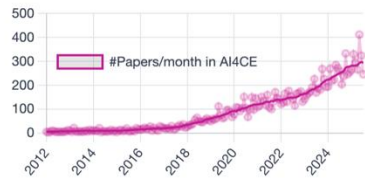
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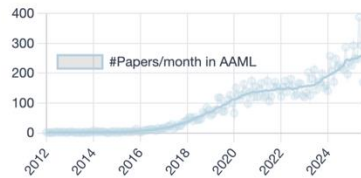
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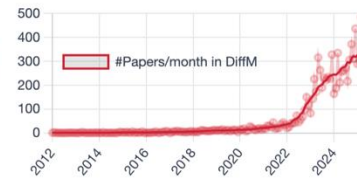
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Papers 13.9K # Contributors 31.4K # followers 42



Papers 12.0K # Contributors 38.9K # followers 150



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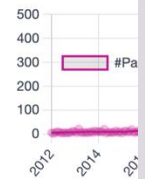
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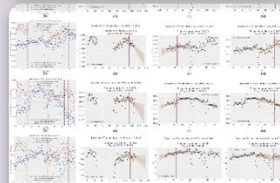
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The Lock-in Hypothesis: Stagnation by Algorithm

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MMLU-ProX: A Multilingual Benchmark for Advanced

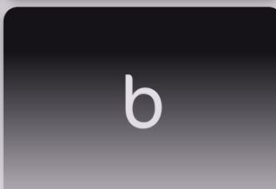
MiniMax-M1: Scaling Test-Time Compute Efficiently with Lightning Attention

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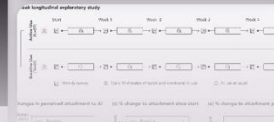
Cartridges: Lightweight and general-purpose long context representations via self-study

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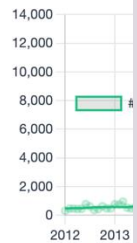


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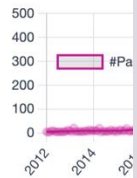
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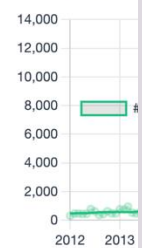
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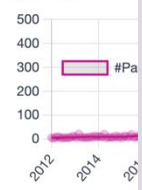
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Gonot-Schoupsky Garip 2018
Laughter and humour interventions for well-being in older adults: A systematic review and intervention classification
Complementary Therapies in Medicine
Abstract Objectives To assess the potential of laughter and humour interventions to increase well-being in a general population of adults aged 60 plus, and to develop a classification to compare approaches and potential benefits of different intervention types. Design A systematic search of Web of Science, PubMed/MEDLINE, PsycInfo, AMED, and PsychArticles used inclusive terms relating to laughter and humour interventions. A realist synthesis approach enabled heterogeneous interventions to be compared pragmatically. Setting Five laughter interventions, and one humour intervention, using one or more outcome related to well-being, were considered for inclusion after screening 178 primary research papers. The five laughter interventions, representing a sample of 369 participants, were retained. Main outcome measures Well-being related outcome measures reported in each intervention informed efficacy. Joanna Briggs Institute tools appraised design, and a realist approach enabled heterogeneous interventions to be measured on their overall potential to provide an evidence base. Results Well-being related measures demonstrated at least one significant positive effect in all interventions. Confounding factors inherent in the intervention types were observed. Individual participant laughter was not reported. Conclusions Laughter and humour interventions appear to enhance well-being. There is insufficient evidence for the potential of laughter itself to increase well-being as interventions contained a range of confounding factors and did not measure participant laughter. Interventions that isolate, track, and measure the parameters of individual laughter are recommended to build evidence for these potentially effective and novel interventions. The authors

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New conference proceedings
This digest contains papers from the new proceedings of [Annual Meeting of the Association for Computational Linguistics \(ACL\)](#), [Findings of the Association for Computational Linguistics \(Findings of ACL\)](#).

CiteLab: Developing and Diagnosing LLM Citation Generation Workflows via the Human-LLM Interaction
Jiajun Shen, Tong Zhou, Yubo Chen, Kang Liu, Jun Zhao
Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 3: System Demonstrations) 89 0 0 0 Language

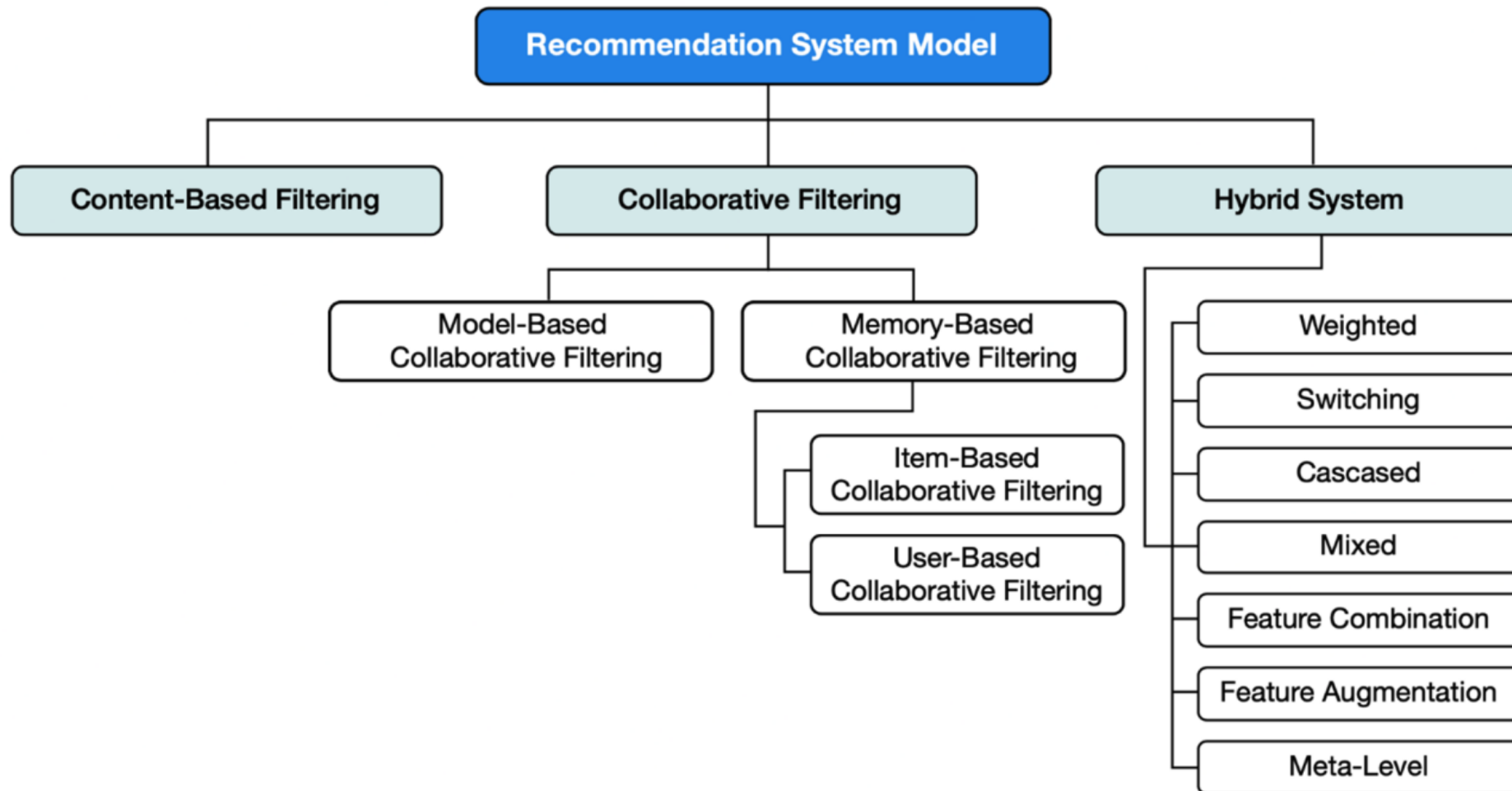
The emerging paradigm of enabling Large Language Models (LLMs) to generate citations in Question-Answering (QA) tasks is lacking in a unified framework to standardize and fairly compare different citation generation methods, leading to difficulties in reproduction and innovation. Therefore, we introduce Citeflow, an open-source and modular framework fostering reproduction and the implementation of new designs. Citeflow is highly extensible, allowing users to utilize four main modules and 14 components to construct a pipeline, evaluate an existing method, and understand the attributing LLM-generated contents. The framework is also paired with a visual interface, Citefix, facilitating case study and modification of existing citation generation methods. Users can use this interface to conduct LLM-powered case studies according to different scenarios. Citeflow and Citefix are highly integrated into the toolkit CiteLab, and we use an authentic process of multiple rounds of improvement through the Human-LLM interaction interface to demonstrate the efficiency of our toolkit on implementing and modifying citation generation pipelines. CiteLab is released at <https://github.com/Sj1017/CiteLab>

FineCite: A Novel Approach For Fine-Grained Citation Context Analysis
Lasse M. Jantsch, Dong-Jae Koh, Seonghwan Yoon, Jisu Lee, Anne Lauscher, Young-Kyoon Suh
Findings of the Association for Computational Linguistics: ACL 2025 83 0 0 0

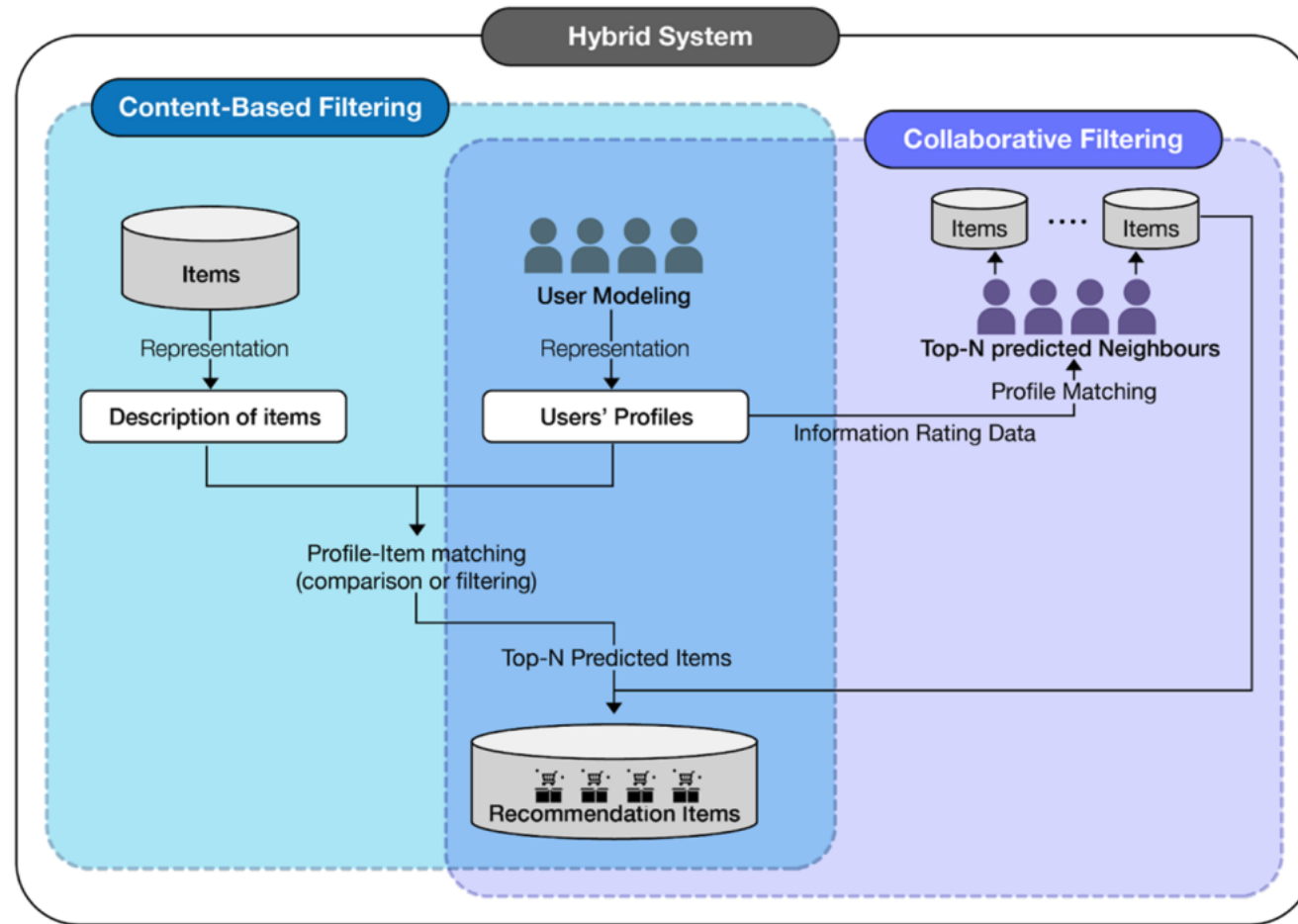
Citation context analysis (CCA) is a field of research studying the role and purpose of citation in scientific discourse. While most of the efforts in CCA have been focused on elaborate characterization schemata to assign function or intent labels to individual citations, the citation context as the basis for such a classification has received rather limited attention. This relative neglect, however, has led to the prevalence of vague definitions and restrictive assumptions, limiting the citation context in its expressiveness. It is a common practice, for example, to restrict the context to the citing sentence. While this simple context conceptualization might be sufficient to assign intent or function classes, it fails to cover the rich information of scientific discourse. To address this concern, we analyze the context conceptualizations of previous works and, to our knowledge, construct the first comprehensive context definition based on the semantic properties of the citing text. To evaluate this definition, we construct and publish the FineCite corpus containing 1,056 manually annotated citation contexts. Our experiments on established CCA benchmarks demonstrate the effectiveness of our fine-grained context definition, showing improvements of up to 25% compared to state-of-the-art approaches. We make our code and data publicly available at <https://github.com/lab-paper-code/FineCite>.

A³: Automatic Alignment Framework for Attributed Text Generation
Yue Wang, Haoke Zhang, Juntao Li, Jinxiong Chang, Min Zhang
Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers) 72 0 0 0 Language

Recommendation System

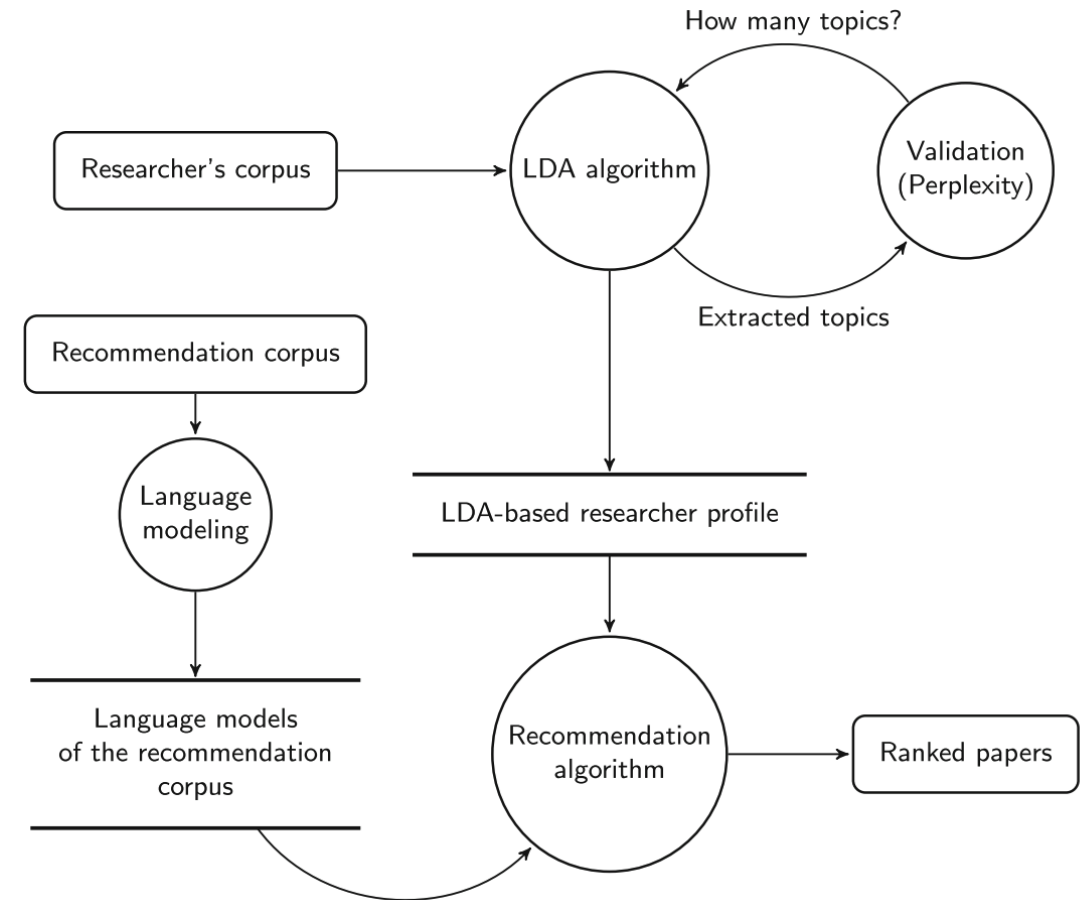


Pipeline of recommendation systems



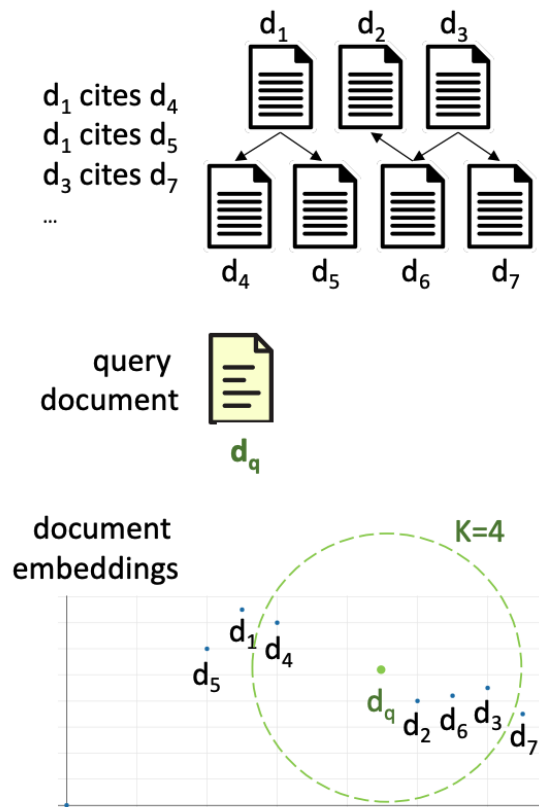
Content-based Methods

- Compares topics from the researcher's profile with the language models of unseen papers.
- Uses the symmetrized Kullback-Leibler divergence to measure similarity between probability distributions (topics and language models).
- **Limitations**
 - Shifted Cold-Start Problem
 - Potential for Limited/General Concepts
 - Lack of Contextual Citation Information



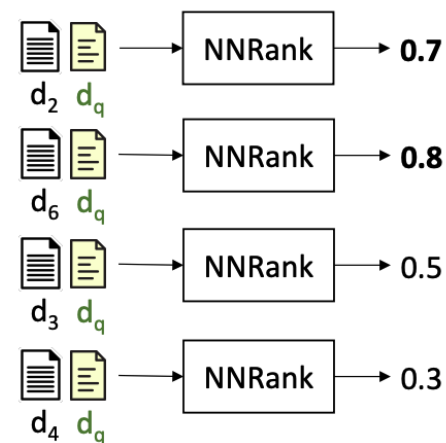
NNSelect+NNRank

Phase 1: candidate selection

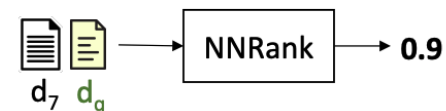


Phase 2: reranking

nearest neighbors of d_q :



cited in nearest neighbors:

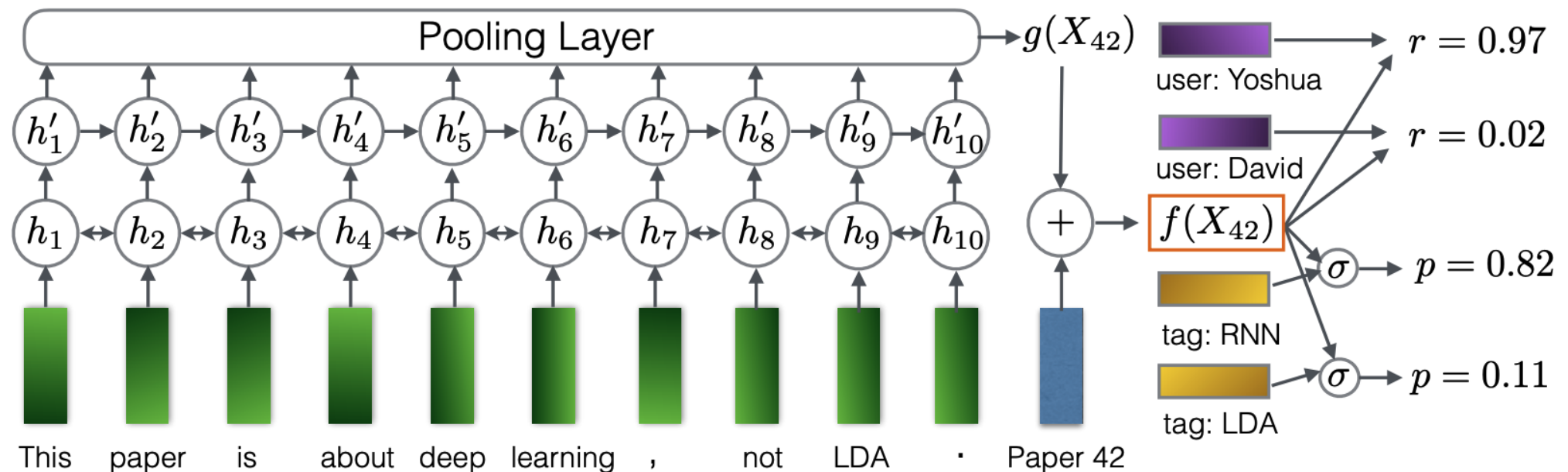


reranked list

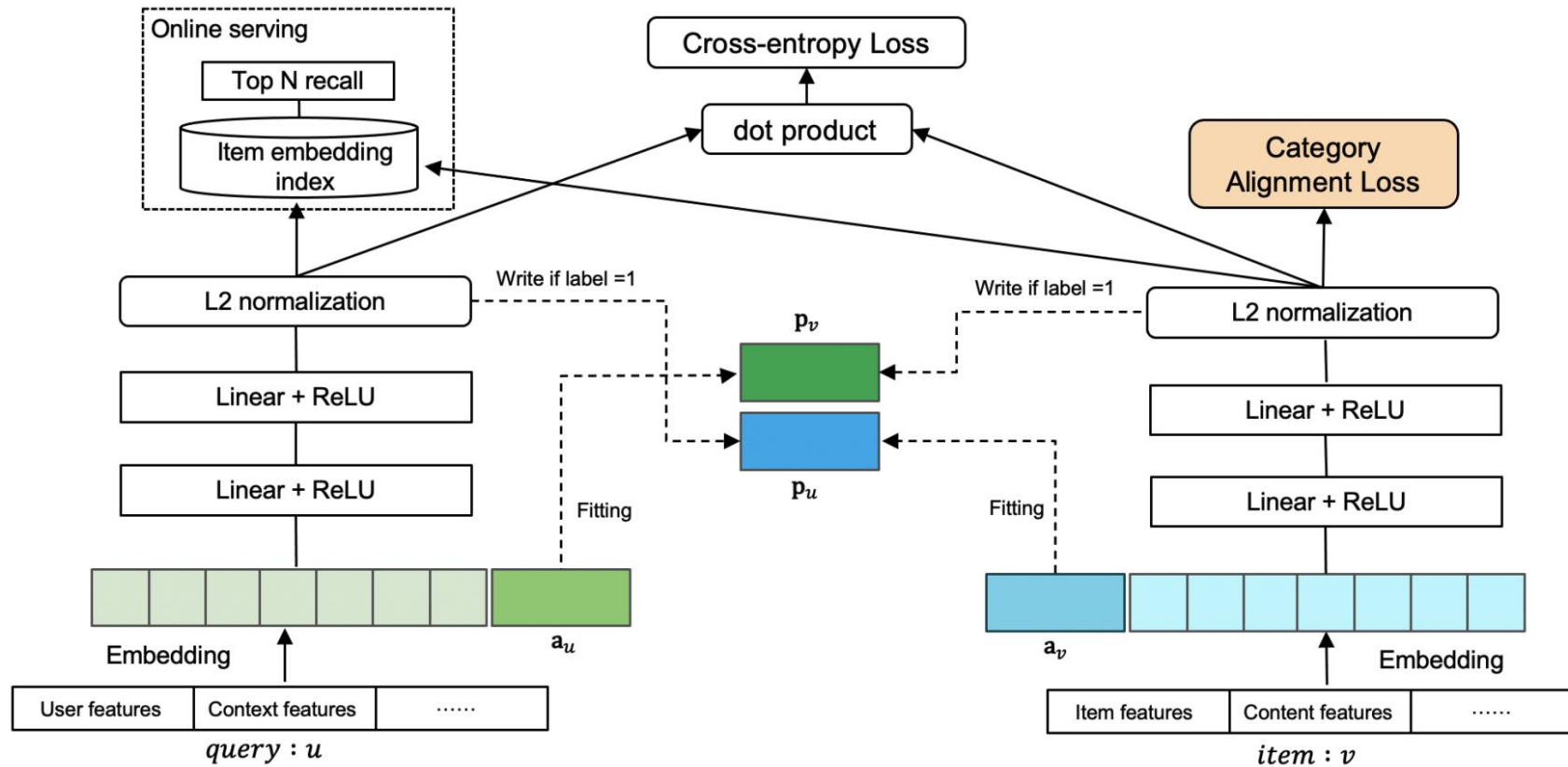
d_7	top N=3 recommendations
d_6	
d_2	
d_3	
d_4	

Collaborative Filtering

- By training a text encoder network as a combination of content recommendation and item metadata prediction (e.g., tag prediction)



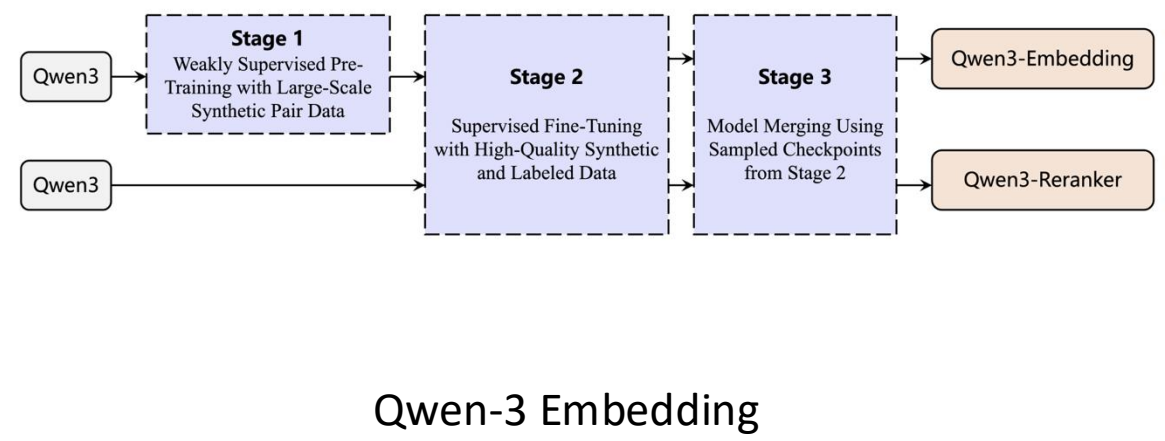
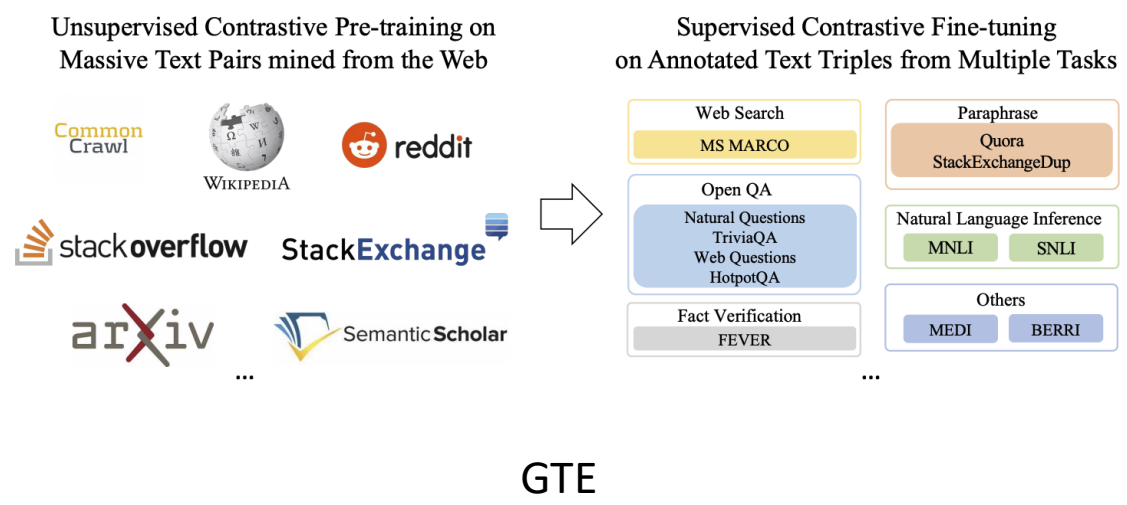
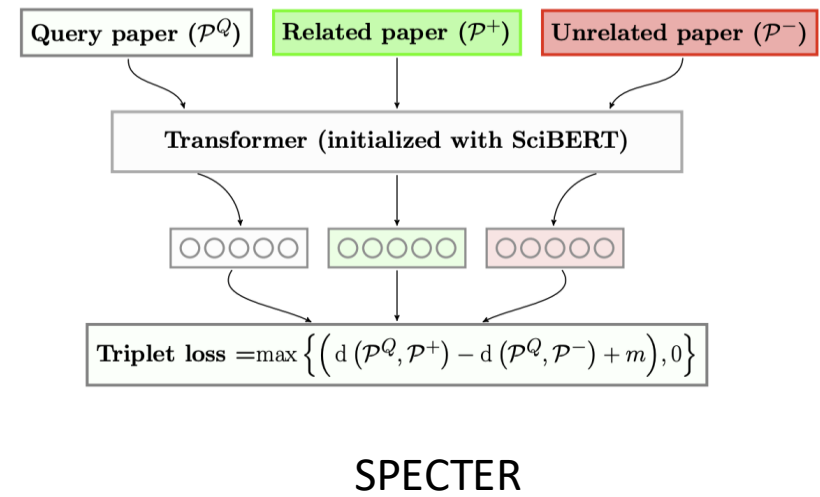
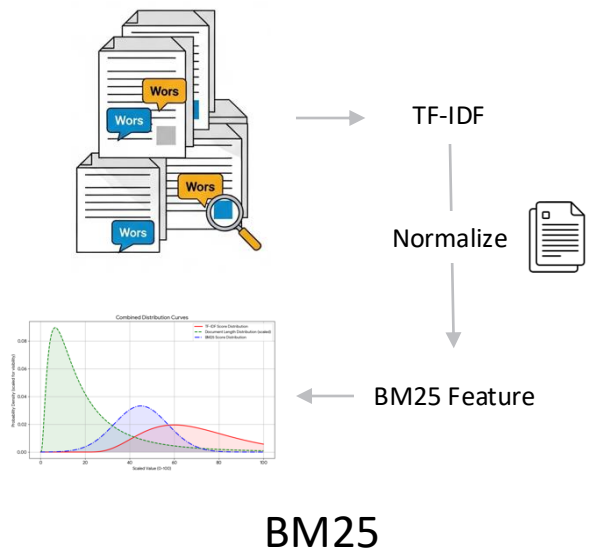
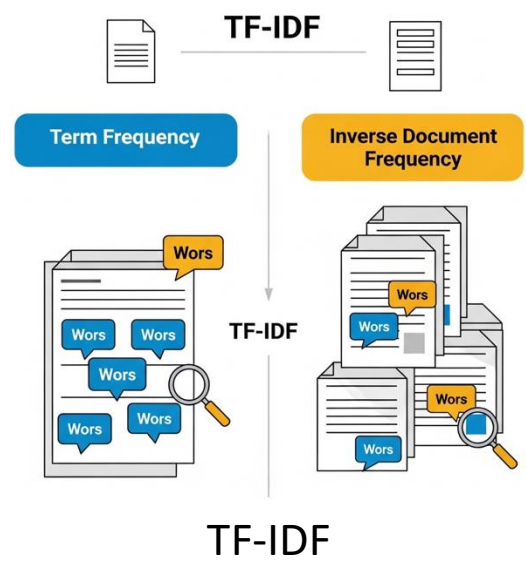
Hybrid Systems



Comparision of Recommendation Systems

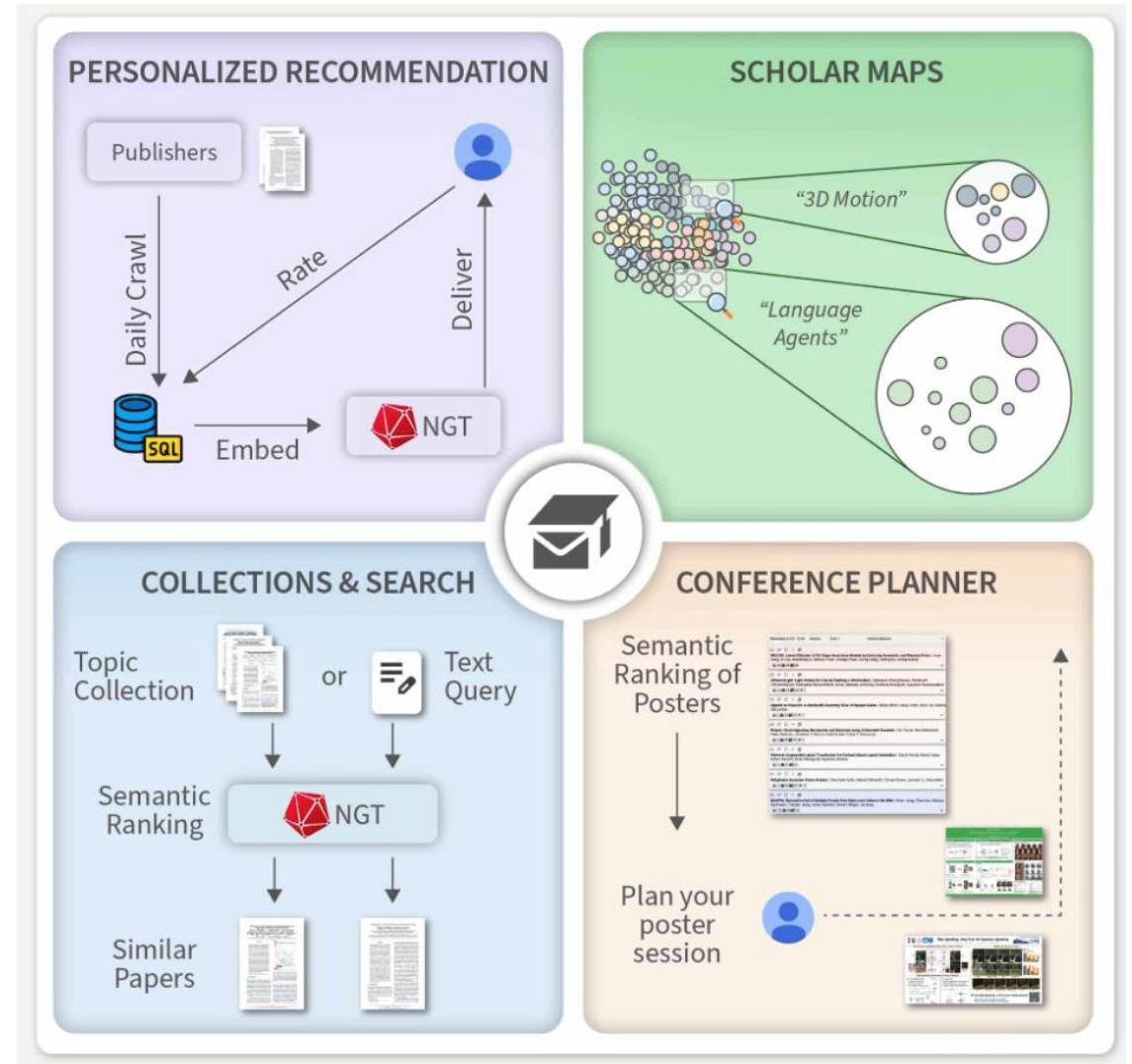
Model Type	Pros	Cons
Content-Based Filtering	<ul style="list-style-type: none"> • Works well for new users • Personalized to individual preferences • Doesn't require large user base • Easy to interpret recommendations 	<ul style="list-style-type: none"> • Needs detailed item features • Limited discovery of new interests
Collaborative Filtering	<ul style="list-style-type: none"> • Doesn't need item metadata • Leverages collective user behavior 	<ul style="list-style-type: none"> • Struggles with sparse data • Scalability issues in memory-based
Hybrid Systems	<ul style="list-style-type: none"> • Combines best of all models • Mitigates individual weaknesses • Often improves accuracy 	<ul style="list-style-type: none"> • Increased complexity • Requires more computation

Document Embeddings

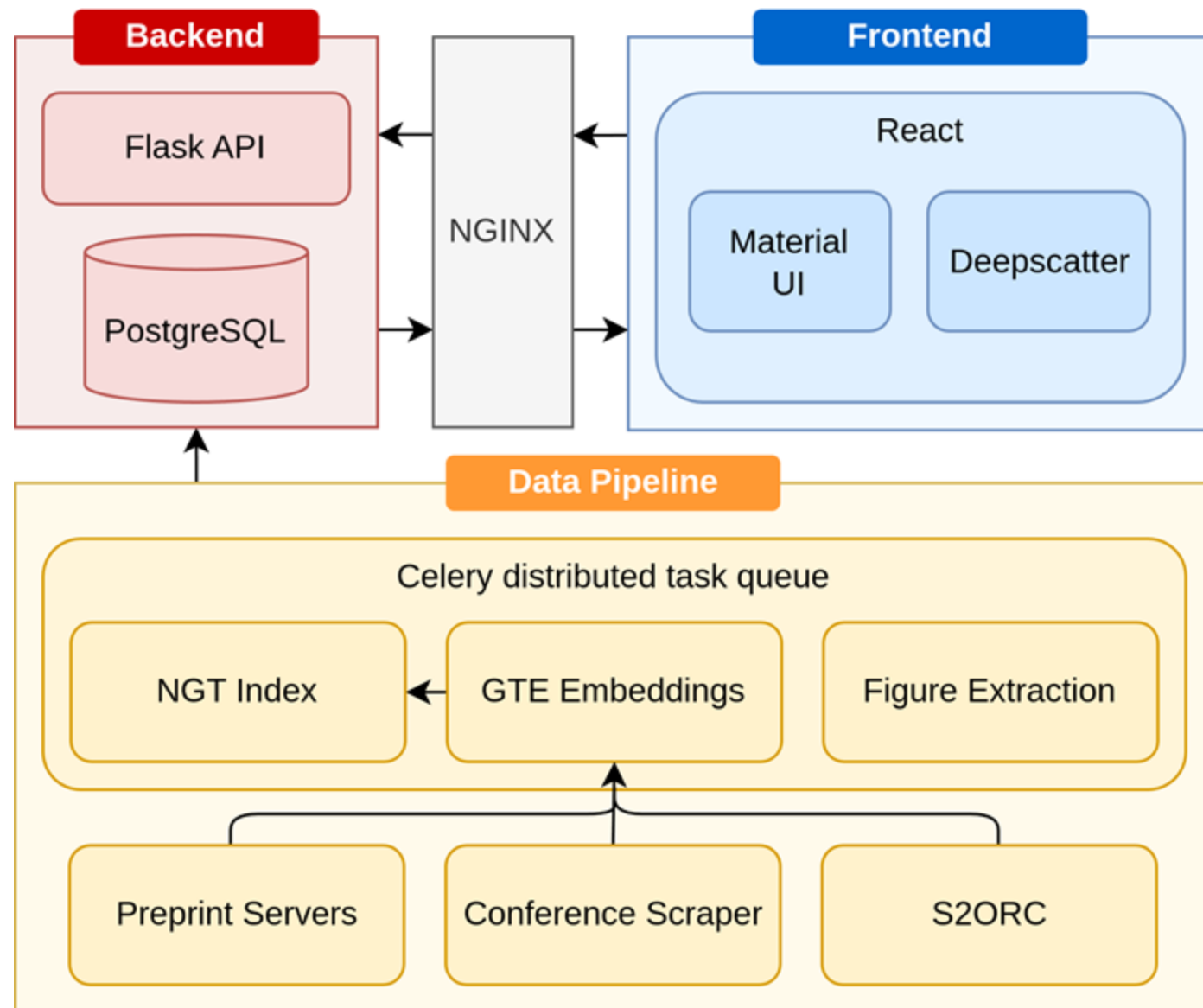


Scholar Inbox – 2025 Demo

- Personalized Recommendations
- Scholar Maps
- Collections
- Conference Planner



Software Flow



Recommender system

Scholar Inbox

Digest

Trending

Interactions

Scholar Maps

Conferences

Labels

Bookmarks

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Neural Radiance F...

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93

Relevance

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GIRAFFE: Representing Scenes as Compositional Generative Neural Feature Fields
 Michael Niemeyer, Andreas Geiger
 Computer Vision and Pattern Recognition (CVPR), 2021

19
 23
 1013

Deep generative models allow for photorealistic image synthesis at high resolutions. But for many applications, this is not enough: content creation also needs to be controllable. While several recent works investigate how to disentangle underlying factors of variation in the data, most of them operate in 2D and hence ignore that our world is three-dimensional. Further, only few works consider the compositional nature of scenes. Our key hypothesis is that incorporating a compositional 3D scene representation into the generative model leads to more controllable image synthesis. Representing scenes as compositional generative neural feature fields allows us to disentangle one or multiple objects from the background as well as individual objects' shapes and appearances while learning from unstructured and unposed image collections without any additional supervision. Combining this scene representation with a neural rendering pipeline yields a fast and realistic image synthesis model. As evidenced by our experiments, our model is able to disentangle individual objects and allows for translating and rotating them in the scene as well as changing the camera pose.

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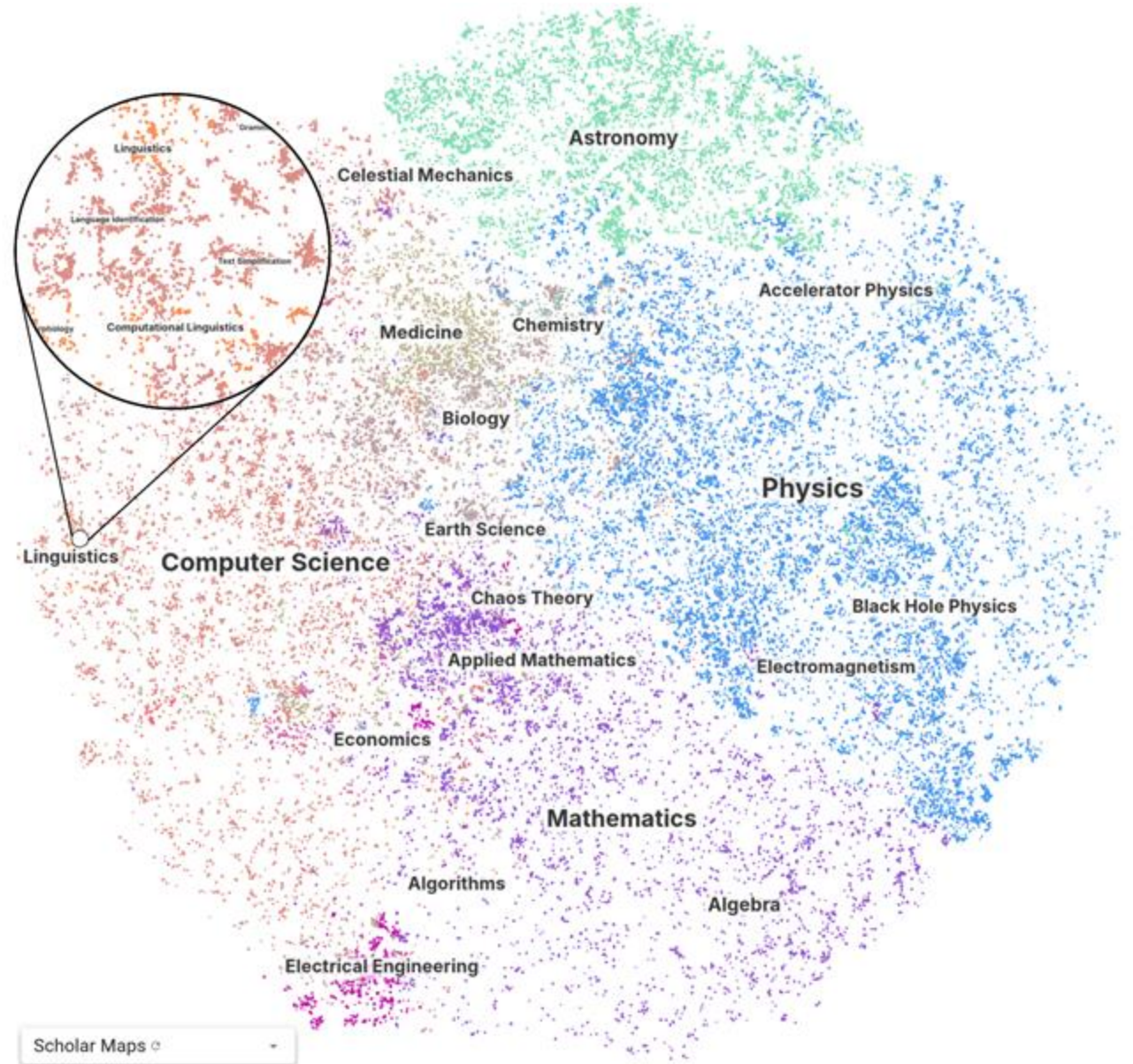
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Relevance

GIRAFFE: Representing Scenes as Compositional Generative Neural Feature Fields
 Michael Niemeyer, Andreas Geiger

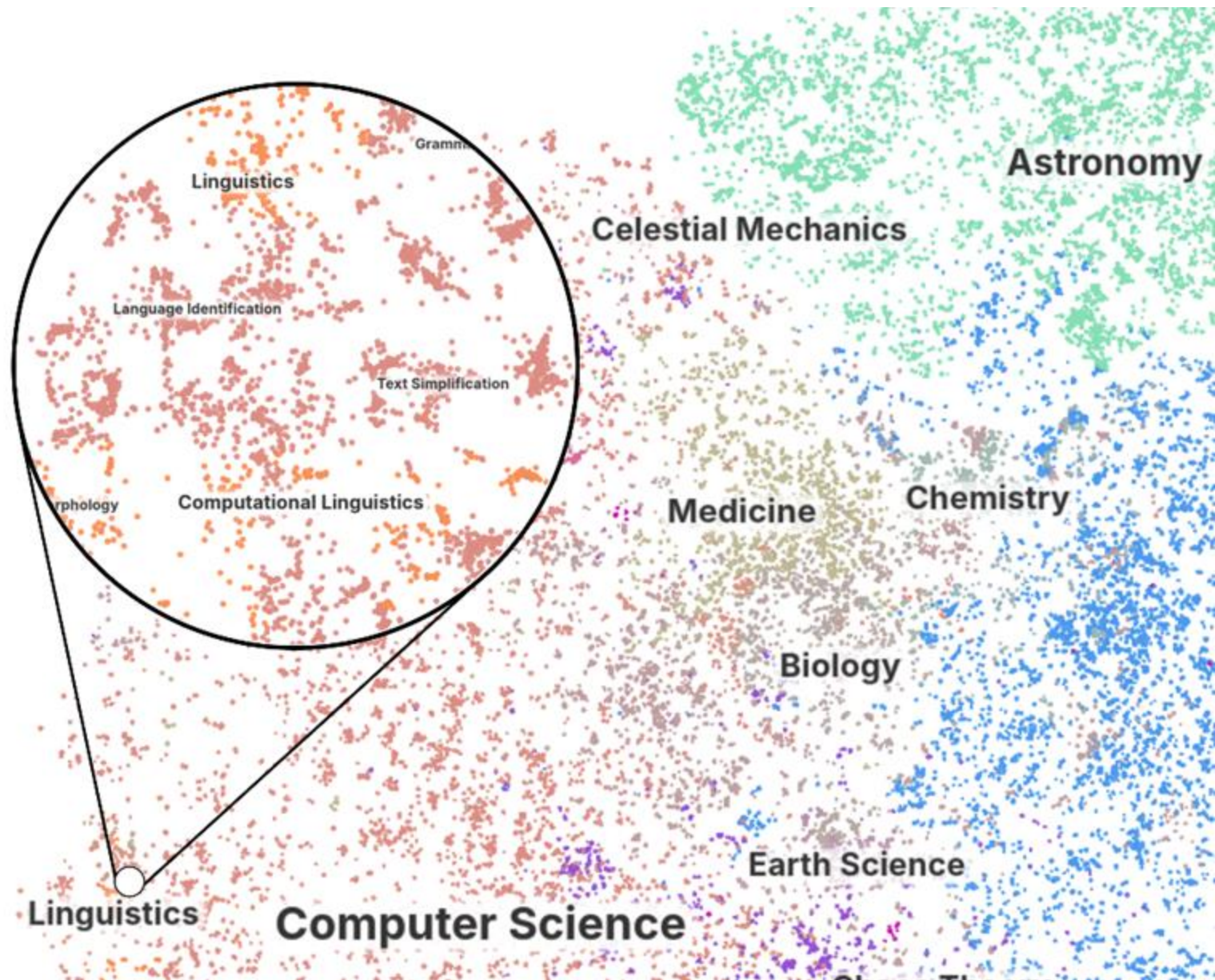
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Scholar Maps

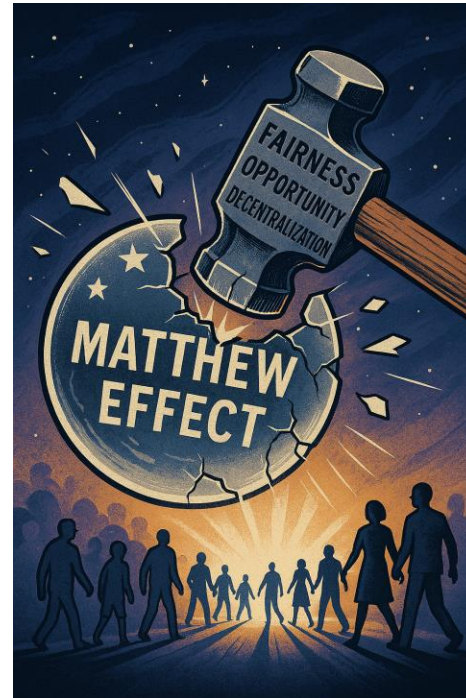


[Scholar Inbox: Personalized Paper Recommendations for Scientists, 2025](#)

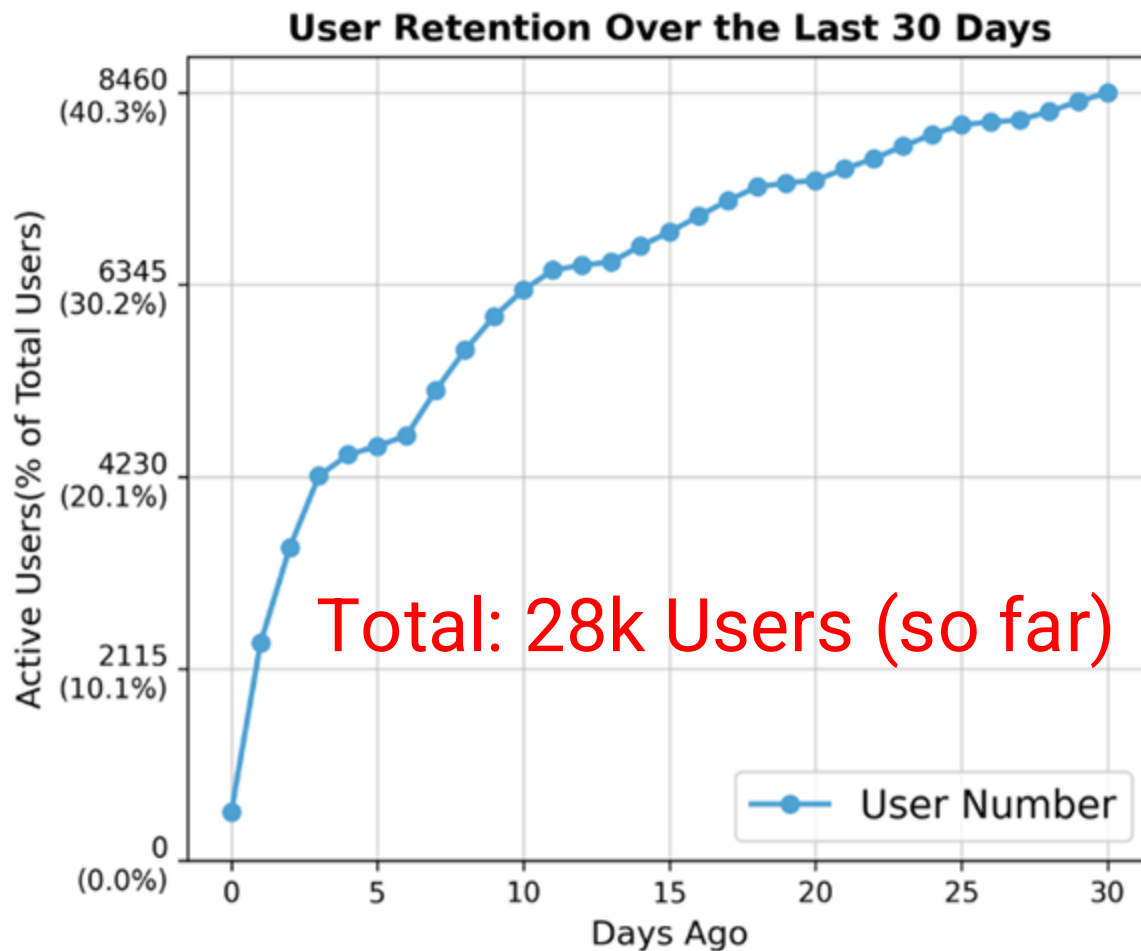
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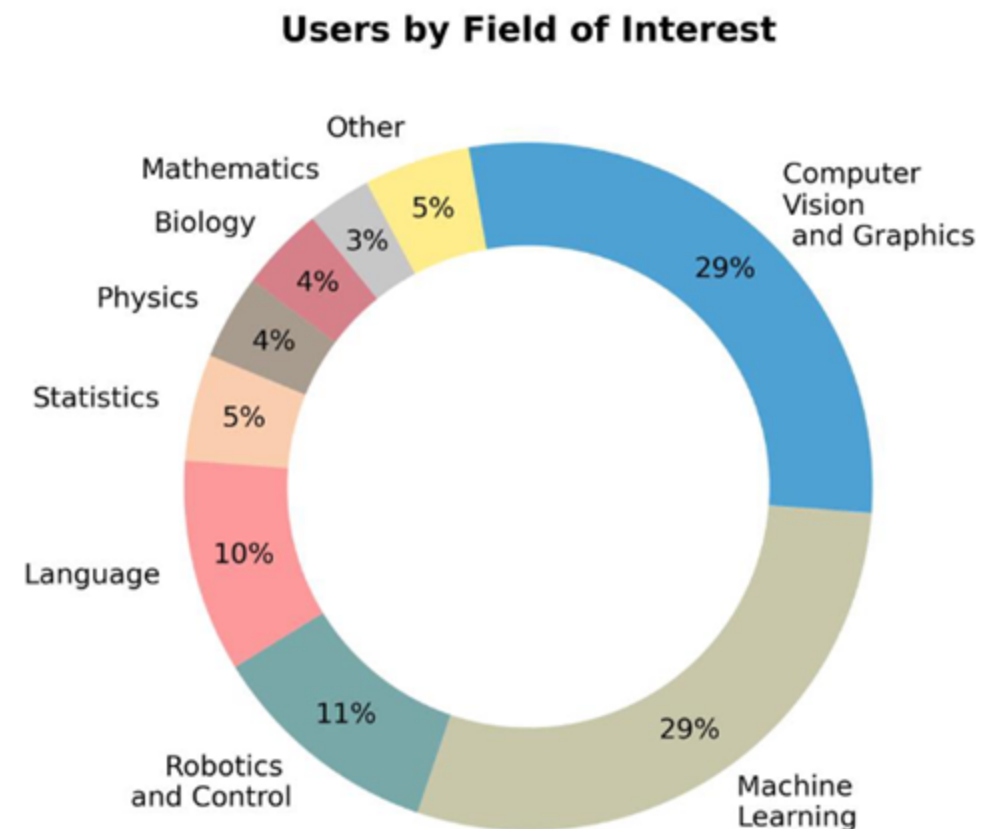
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(a) User Retention



(b) User Domain Distribution

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- Hall 5X, 28th July, 11:00-12:30, ACL 2025.

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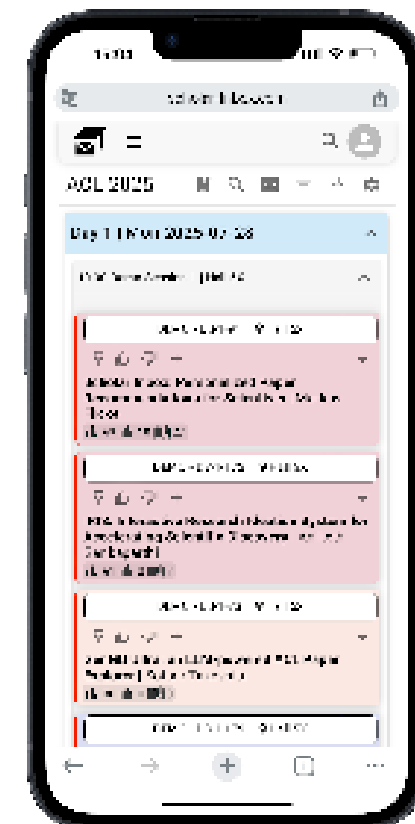
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4 (Summary) - Recommendation System

- Main Function
 - Keep updated literatures
 - Personalized Recommendation
 - Collections
- Key techniques
 - Content-Based Filtering
 - Collaborative Filtering
 - Semantic Search & Embeddings
- Challenges
 - Cold Start Problem
 - Overpersonalization vs Matthew Effect
 - Dynamic Interests of Researchers

[illegible]

Other AI-enhanced Literature Search

Platform		Search	Recommendations	Collections	Citation Analysis	Trending Analysis	Author Profiles	Visualization Tools	Paper Chat	Idea Generation	Paper Writing	Summarization	Paper Review	Datasets	Code Repositories	LLM Integration	Web API	Personalization	Cost	Data Source
Search Engines	Google Scholar	✓	✓	✓	✓	✓									✓	✓	✓	✓	Free	
	Semantic Scholar	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓	✓	✓	Free	214 million
	Baidu Scholar	✓	✓	✓	✓	✓	✓								✓		✓	✓	Freemium	680 million
	BASE	✓		✓												✓			Free	415 million
	Internet Archive Scholar	✓														✓			Free	35 million
	Scilit	✓		✓	✓		✓												Free	172 million
	The Lens	✓		✓			✓									✓			Freemium	284 million
	Science.gov	✓						✓											Free	several million
	Academia.eu	✓		✓			✓												Freemium	55 million
	OpenAlex	✓					✓									✓			Freemium	
	AceMap	✓			✓	✓	✓	✓					✓						Free	260 million
	PubTator3	✓		✓	✓											✓			Free	6 million
Benchm.	Papers with Code	✓										✓	✓						Free	154 thousand
	ScienceAgentBench									✓		✓	✓	✓					Free	
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Conclusion

- AI is transforming literature search.

Conclusion

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- AI tools boost discovery but still require oversight.

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- Four AI paradigms jointly redefine research workflows.

Conclusion

- AI is transforming literature search.
- AI tools boost discovery but still require oversight.
- Four AI paradigms jointly redefine research workflows.
- Future directions point to smarter, multimodal systems.

Future Direction

- Multimodal literature search
 - Integrating text and figures/tables
- Event-oriented summarization
 - Extracting and organizing key research events (e.g., discoveries, methods, results) for clearer insights
- Real-time updates & knowledge tracking
 - Continuous integration of new findings
- Integration with scientific knowledge graphs
 - Structured, interconnected research data

Thank you! Any questions?

